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THE MOTHER AND HER FIRST-BORN.

What is so attractive as a young and beautiful mother with her babe?
"A mother is a mother still, the holiest thing alive."

HYGIENE TOCOLOGY PEDIATRICS

WOMAN

IN

GIRLHOOD—WIFEHOOD—MOTHERHOOD

HER RESPONSIBILITIES AND HER DUTIES AT ALL PERIODS OF LIFE

A GUIDE

IN THE MAINTENANCE OF HER OWN HEALTH AND THAT OF HER CHILDREN

—BY—

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PROFUSELY ILLUSTRATED WITH COLOR PLATES SCIENTIFIC DRAWINGS AND HALF-TONE ENGRAVINGS

—WITH—

MANIKIN CHART

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PREFACE AND INTRODUCTION.

IT is remarkable in this age of higher education for women that instruction concerning so many important things in a woman's life should be practically neglected, and, as a rule, left to chance. Through ignorance of Nature's hygienic laws a woman often loses not only her health, but also the beauty that is dependent upon it.

THE MOTHER AND HER BABY.

The young mother commits many grave errors when caring for her baby by too often relying solely upon her intuition, or upon the advice of ignorant friends. Many parents neglect to give their children the information and advice needed at the period of adolescence because, not possessing full knowledge as to the phenomena of such a time and not realizing the dangers of silence, they feel diffident and embarrassed about referring to the subject. All through her life, from infancy to old age, a woman frequently suffers from conditions which she might have avoided had she been properly informed as to the rules of

health. Yet each woman must solve the hygienic problems of clothing, food and bathing, the ventilation of the home, and the physical, mental and moral training of the children.

It is to supply the information that keeps a woman well and happy and guides her in bringing up a family strong in body, in mind and in morals, that this book has been written.

The proper person to instruct a woman in many of these matters no doubt is her family physician. But the busy practitioner seldom can take the time to discuss the details of right living and explain how disease is to be prevented. These things he, too, leaves to chance. In fact, the doctor is seldom consulted except to treat some one who is sick, and then must spend his whole time in getting the patient well. After she has allowed the doctor to depart, how often does the young mother or the sick girl recollect something about which she had neglected to ask advice!

Thus it happens that for directions about the details of her life, when sick and well, a woman must rely upon an accurate book which she can consult at all times. Unfortunately, many of the books sold as health guides for women are unreliable and of a doubtful character. Pretending to be physiological, they are in reality prurient and suggestive, and cater to a depraved taste. In this book the endeavor is made to give all the information a woman requires for any of the emergencies that may occur during her own life and for the preservation of health and beauty.

The author has used simple language throughout, avoiding technical terms, and has endeavored to make the statements so plain and clear as to be easily understood by every one. At the same time he has written only what is in accordance with the latest scientific knowledge. Moreover, in giving advice, he has avoided generalities and has made his directions pointed and definite.

PREFACE AND INTRODUCTION

The first part of the book treats of health and beauty, telling how both may be preserved and obtained. The care of the skin, the complexion, the hair, the teeth and the nails, the questions of clothing and dress, food and drink, and exercise and rest, are taken up in detail. The second part describes the important periods of a woman's childhood, maidenhood, wifehood and motherhood, giving the practical knowledge that prevents disease and promotes woman's health and happiness. The management of childbirth is then considered, with full directions as regards the preparations for the confinement, the labor itself, and the care of mother and baby after the latter is born. This is followed by "The Baby, and How to Care for It," including the bathing, clothing, feeding, exercising, training and amusing of the well baby and the management of the sick baby. Next come the diseases peculiar to women, the causes of which are pointed out, that they may be avoided. Prevention is given prominence and methods of treatment are described in cases where simple home remedies may be applied without harm and in emergencies.

Great care has been used in the selection of illustrations, that they be both appropriate and in sufficient number to elucidate the text; they have been inserted in the form of scientific drawings, photographs and special artists' sketches. A manikin, drawn, colored and put together with great exactness, and explained with a descriptive key, accompanies each book for the use of those who are interested in the study of anatomy.

Any unavoidable medical or other terms requiring elucidation are fully explained in a glossary.

A complete index has been added, so that anything in the book may be found in a few seconds.

MYER SOLIS-COHEN.

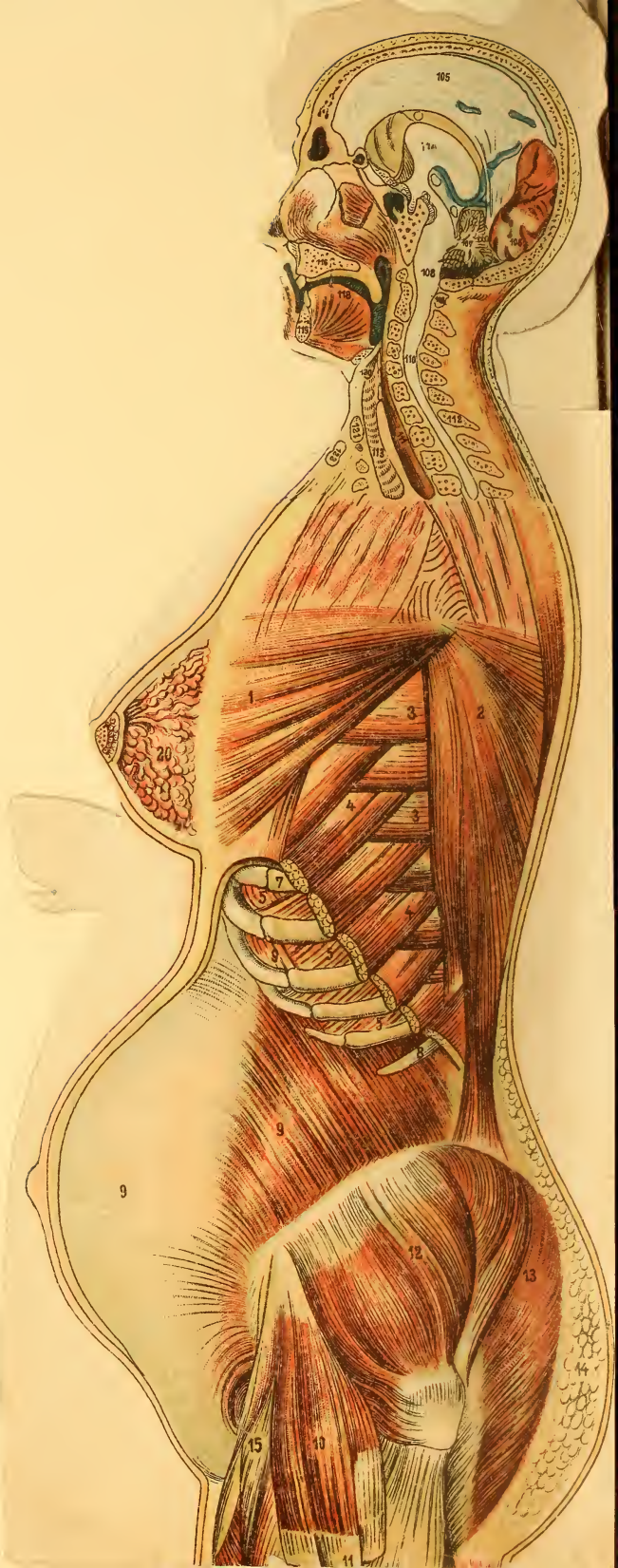
4110 Parkside avenue, Philadelphia.
1905.

EXPLANATION OF MANIKIN CHART.

1. The large breast-muscle.
2. The broad muscle of the back.
3. The serrated muscle.
4. Commencement of the external oblique muscle.
5. External } muscles between the ribs.
6. Internal }
7. Seventh rib.
8. Twelfth or floating rib.
9. Internal oblique muscle, forming a broad thin sheet at the median line.
10. The long thigh muscle.
11. Ligament formed by the lower end of the long thigh muscle.
12. Hip muscle.
13. The muscle of the buttocks.
14. The fat of the buttocks.
15. Middle } extensor muscles of the
16. Inner } thigh.
17. Outer }
18 and 19. Flexor muscles of the thigh.
20. Mammary gland or breast.
21. One of the bones of the spine.
22. Collar-bone.
23. 1st rib.
24. 7th rib.
25. 12th or floating rib.
26. Breast-bone.
27. The muscles between the ribs.
28. Hip bone. (One of the bones of the pelvis).
29. Upper front corner of the hip bone.
30. Upper back corner of the hip bone.
31. The socket of the hip.
32. Prominence on the bone of the buttocks.
33. Bone of the buttocks. (One of the bones of the pelvis).
34. Passageway for blood vessels and nerves.
35. The bone of the seat. (One of the bones of the pelvis).
36. The lowest bone, or lower end, of the spine. (One of the bones of the pelvis).
37. Triangularis sternis muscle.
38. Beginning of the external oblique muscle.
39. Diaphragm, which divides the chest from the abdomen. (Cut through).
40. Upper border of the hip bone. (One of the bones of the pelvis).
41. Concavity on the inner side of the hip bone.
42. Ridge of bone forming the lower border of the above.
43. Junction of the two pubic bones.
44. Pubic bone.
45. Upper end of the bone of the buttocks.
46. Part of the bone of the buttocks on which we sit.
47. One of the bones of the spine.
48. The bone of the seat. (Cut in half). (Same as No. 35).
49 and 50. Ligaments connecting the above with the bone of the buttocks.
51. Upper, }
52. Middle, } lobes of the lung.
53. Lower, }
54. Bronchial tubes. (Cut across).
55. Mammary gland or breast, cut through so as to show its structure. (Same as No. 20).
56. Nipple (cut through), showing how all the milk ducts converge there.
57. Breast bone cut in half. (Same as No. 26).
58. One of the bones of the spine. (Cut in half).
59. One of the bones of the spine. (Cut in half).
60. One of the bones of the spine. (Cut in half). (Same as No. 47).
61. The bone of the seat. (Cut in half). (Same as Nos. 35 and 48).
62. Muscles of the spine.
63. Spine, cut open so as to show the spinal cord and the nerves coming from it.
64. The muscle that surrounds and closes the anus. (Cut through).
65. Trachea or wind-pipe. (Cut across).
66. Portion of the pleura, or membrane covering the lungs.
67. A portion of the heart.
68. Diaphragm. (Same as No. 39)
69. Large blood vessel leaving the heart. (Cut across).
70. Lower branch of the above.
71. Duct. (Cut across).
72. Membrane covering the liver.
73. Liver. (Cut across).
74. Stomach. (Cut across).
75 and 76. Coils of the large intestines. (Cut across).
77. Rectum. (Cut across).
78. Pancreas.

EXPLANATION OF MANIKIN CHART.

79. Esophagus or gullet. (Cut across).
80. Subclavian vein. (Cut across).
81. Pulmonary artery.
82. Pulmonary artery. (Cut across).
83. Large vein entering the heart. (Cut across).
84. A portion of the heart (cut across so as to show one of the chambers).
85 and 86. Vein. (Cut across).
87. Artery. (Cut across).
88. Uterus or womb at the end of pregnancy.
89. Cervix or mouth of the womb at the end of pregnancy.
90. Inner wall of the womb at the end of pregnancy.
91. The child in the womb.
92. Placenta or after-birth.
93. Vagina.
94. Labia minora.
95. Labia majora.
96. Anus.
97. Bladder.
98. Abdominal or belly cavity.
99. Clitoris.
100. Junction of the pubic bones. (Cut across). (Same as No. 43).
101. The non-pregnant uterus. (Cut across).
102. Ovary.
103. The round ligament supporting the uterus.
104. Fimbriated extremity of the oviduct or fallopian tube.
105. Membrane dividing the two lobes of the great brain or cerebrum.
106. Portion of the great brain or cerebrum.
107. Cerebellum or little brain. (Cut across).
108. Medulla.
109. The uppermost bone of the spine.
110. Spinal cord.
111. Esophagus or gullet. (Same as No. 79).
112. The most prominent bone of the spine.
113. Trachea or wind-pipe. (Same as No. 65).
114. Cerebrum or great brain.
115. Nasal center.
116. Roof of mouth or hard palate.
117. Soft palate.
118. Tongue.
119. Chin bone.
120. Larynx or speaking box.
121. Thyroid gland. (This sometimes becomes a goitre).
122. Breast bone or sternum. (Same as No. 26).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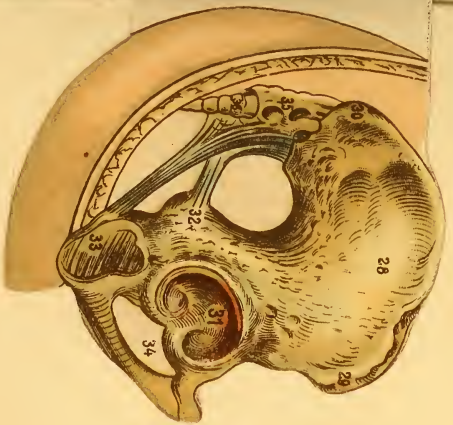
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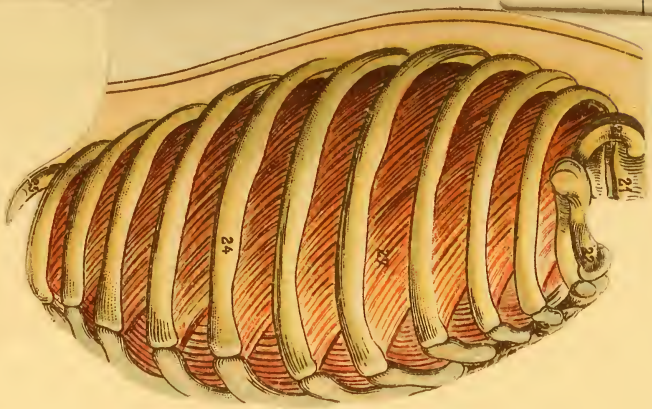
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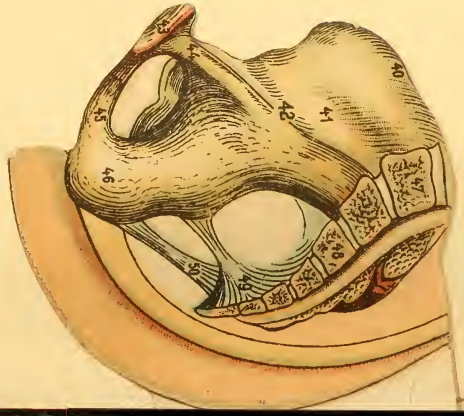
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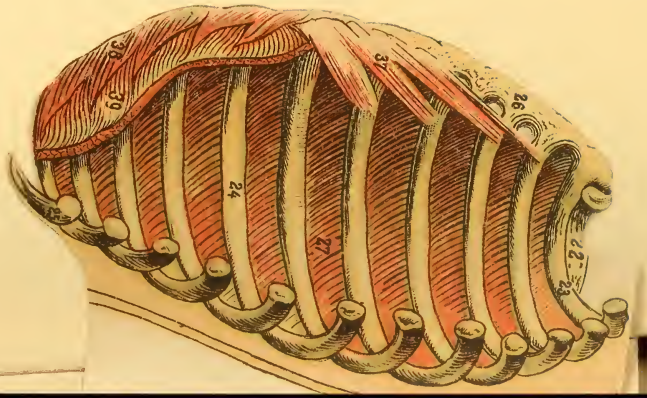
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PART I.

HEALTH AND BEAUTY.

CHAPTER I.

THE BASIS OF BEAUTY.

Standards of Beauty: according to Voltaire; among different ages and among different peoples; with the cultivated. Modern ideas of Beauty: Symmetry, Proportion, Curves, Color, Gradation. Human beauty not complete without expression. Youth not necessary to beauty. Health an essential. How every woman can acquire, increase, or retain beauty. The perfect woman.

"A thing of beauty is a joy forever;
Its loveliness increases; it will never
Pass into nothingness."

—*Keats.*

MAN'S idea of beauty represents the best of what he sees. By observing and comparing all about him he finds what pleases him most; this he calls beauty. One's standard of beauty will depend largely on what one has been accustomed to. Voltaire, the great French philosopher, says: "Ask of a toad what is beauty, pure beauty, he will answer you that it is his female, with two large, round eyes projecting from her little head, a large and fat throat, a yellow belly and a brown back. Ask the devil, and he will tell you that the beautiful is a pair of horns, four claws and a tail."

Ideas of Beauty in Different Countries.—The sentiments of mankind with regard to female beauty have varied with different ages, nations and peoples. A North American Indian's ideal of female beauty differs from that of a China-

man. It is said that among the ancients a small forehead and joined eyebrows were much admired in a woman, and that in Persia to-day large, joined eyebrows are highly esteemed. In some parts of Asia, we are told, black teeth and white hair are essential to beauty, in the Mariana Islands it being customary among the women to blacken their teeth with herbs. Park relates of the Moors of Africa that with them corpulence and beauty are nearly synonymous terms. The gentle sex take great pains to acquire this accumulation of fat early in life; for this purpose young girls are compelled every morning to drink a large bowl of camel's milk.

Beauty and Health.

Appreciation of Real Beauty.—It is only the highly cultivated, however, who can appreciate real beauty. Ruskin says that no importance whatever is to be attached to the opinions of races who have never received any ideas of beauty whatsoever; that ideas of beauty are only received by minds under some certain degree of cultivation. Those who have this cultivation do not vary in their views as to beauty, but all hold the same opinion. Whatever may be the difference of estimate among unpracticed or uncultivated tastes, there will be unity of taste among the experienced; therefore, the

result of repeated trial and experience is to arrive at principles of preference in some sort common to all, and which are part of our nature.

THE MODERN IDEA OF BEAUTY.

According to modern ideas beauty must respond to certain tests. Of these, the most important are symmetry, proportion, curvature, color and expression.

By symmetry is meant the balance obtained when two parts are placed opposite each other. In animals opposite sides are balanced. The two eyes, cheeks and ears, the two arms, and so on, are equally distant from the median line. This symmetry is less distinct in plant life; but there is still a balance maintained between boughs on opposite sides of a tree, for instance, and the leaves and sprays on each side of the boughs. Flowers, as a rule, have their petals symmetrically arranged. The majority of fruits may be divided into almost identical halves. Even in the arrangement of her scenery, Nature follows this plan. The beauty of a valley lies in its opposite sides, which rise to equal heights; a beautiful stream flows in a winding course, so that one turn balances another.

Proportion is the gradual tapering by which two unequal parts are connected. The tapering of the arm, the narrowing at the waist and at the neck, are all instances of proportion. This same property is seen in the tree, which sends out shorter and smaller branches toward the top.

Curvature is another important test of beauty. All forms of acknowledged beauty, according to Ruskin, are composed exclusively of curves. What makes woman, on the whole, more beautiful than man is the predominance of curves in her outline. According to Professor Kollmann, no line on her body is short and sharply angular; they all swell, or vault themselves in a gentle curve. The neck

and rounded shoulders are connected by gracefully curved lines, whereas a man's neck is placed more at a right angle to the more straight and angular shoulders. All the parts are well covered over with adipose tissue and connected by those gradual transitions which produce the gently rounded outlines; whereas in a man everything—muscles, sinews, blood-vessels, bones—is more conspicuous.

Color and Its Gradations.—Color is generally regarded as a less essential ingredient of beauty than form. It is said to be the kind of beauty in which the eye takes most delight. In "The Spectator" Addison gives a vivid description of Nature's use of color in imparting beauty to the human face: "Nature has laid out all her art in beautifying the face. She has touched it with vermillion, planted in it a double row of ivory, made it the seat of smiles and blushes, enlivened it with the brightness of the eye, hung it on each side with curious organs of sense, given it airs and graces which cannot be described, and surrounded it with such a flowing shade of hair as sets its beauties in the most agreeable light."

An important element in color is gradation. Ruskin says that what curvature is to lines, gradation is to shades and colors. He states that gradation is so inseparably a quality of all natural shade and color that the eye refuses in art to understand anything in either which appears without it; while, on the other hand, nearly all the gradations of Nature are so subtle and between degrees of tint so slightly separated, that no human hand can in any wise equal or do anything more than suggest the idea of them. He is of the opinion that when the eye is quite uncultivated it sees that a man is a man and a face is a face, but has no idea what shadows or lights fall upon the face or features. If the eye be cultivated to some degree of artistic power, it will then see shadows distinctly, but only the more vig-

WINDING LOVE'S SKEIN.

In the fisherman's cottage in Holland, as well as in the American Home, there is the holding of the skein and winding of the yarn with friendship's bond, when "Eyes look love to eyes that speak again"

orous of them. Let it be cultivated still further, and it will see light within light and shadow within shadow, and will continually refuse to rest in what it has already discovered, that it may pursue what is more removed and more subtle, until at last it comes to give its chief attention and display its chief power on gradations which to an untrained faculty are partly matters of indifference and partly imperceptible.

Importance of Expression.—Human beauty is not complete without expression. Form alone soon ceases to fascinate. It is expression, ever changing, that lends attraction to beauty and sustains one's interest. An index as to the mind and character, it has a great part in our estimate of a person. In the expression lies the individuality. The influence of thoughts and emotions is seen in the face. Ruskin tells how the action of the intellectual powers upon the features is shown in the fine cutting and chiseling of them. The removal from them of signs of sensuality and sloth, by which they are blunted and deadened, substitutes energy and intensity for vacancy and insipidity. The want of those qualities alone has spoiled the faces of many fair women and rendered them uninteresting.

YOUTH NOT NECESSARY TO BEAUTY.

Youth, although usually associated with beauty, need not necessarily accompany it. Helen of Troy, whose beauty caused such a long and bloody war, was over forty years of age when Paris fell in love with her and carried her from her native home. Cleopatra, the famous Egyptian charmer, had passed her thirtieth year when she fascinated Marc Antony. At forty, Madame Recamier was universally regarded as the most beautiful woman in Europe. There is a difference, however, in the kind of beauty of the girl of sixteen and of the woman of thirty-five. Each age has its own type. A woman of advanced years makes herself

ridiculous when she tries to look youthful; she should endeavor to enhance the mature charms which are proper to her age. This will give her a more real beauty.

BEAUTY DEPENDS UPON HEALTH.

Ruskin says that if a thing is the result of the complete fulfillment of a natural law it will be beautiful; if of the violation of a natural law it will be ugly. He considers it is easily demonstrable that the pleasure afforded by every living form is in proportion to its appearance of healthy vital energy. In other words, beauty depends upon health.

When Health Goes Beauty Fades.—In disease the eye loses its lustre, the cheek its bloom; the hair becomes harsh and dry, the skin rough. Beauty soon fades when surrounded by unhygienic conditions. On the other hand, by constant attention to the rules of health a woman may develop a degree of beauty, although without such care she might not be in the least attractive.

What Makes and Mars Beauty.—However shapely the hands and nails, without proper care they can never be really beautiful. It is the attention paid to the hair that gives it the fine and soft appearance so much admired. A smooth and clear skin is an indication of health. The figure can be greatly improved by attention to position and carriage and by the practice of proper exercises; it may become misshapen and deformed by faulty position and by neglect of ordinary hygienic rules. Color, which has been shown is an important element of beauty, is dependent altogether upon the condition of the health. The sallow, the yellow, or the pale skin are all indications of disease. Beautiful teeth are due to the owner's intelligent care oftener than to Nature's gift. Indiscretion in diet and ignorance as to the proper kind and amount of exercise necessary may be re-

sponsible for the existence of fat in some cases and for its absence in others.

How to Preserve Beauty.—Health, without question, is the path that leads to beauty. Cosmetics, drugs, and other artificial means only lead one astray. Every woman has as her birthright a beauty which she can acquire, increase or keep throughout her lifetime, if only she respect and obey Nature's commands and warnings. Yet through ignorance she may lose it all. It is one of the purposes of this book to point out and explain in a simple yet scientific manner the rules of hygiene which must be observed in order to obtain and preserve health and beauty, and to show how defects due to the non-observance of these rules may be corrected.

With this object in view, chapters have been written on bathing and the care of the teeth, nails and hair. The proper positions for sitting, standing and walking are given, with exercises for developing the figure and acquiring a graceful poise. Clothing and food and drink are next considered from the hygienic standpoint. This is followed by some practical suggestions on the subject of work, rest and recreation.

THE PERFECT WOMAN.

This study of female beauty has shown that it means something more than a pleasing outline; ennobling and endearing qualities of heart and mind are necessary to it, and health is essential. The perfect woman, who combines all these qualities, has thus been described by Wordsworth:

She was a phantom of delight
When first she gleamed upon my sight;
A lovely apparition, sent
To be a moment's ornament.
Her eyes as stars of twilight fair;
Like twilight's, too, her dusky hair;
But all things else about her drawn,
From the Maytime and the cheerful dawn;
A dancing shape, an image gay,
To haunt, to startle and waylay.

I saw her upon nearer view,
A spirit, yet a woman, too!
Her household motions light and free,
And steps of virgin liberty;
A countenance in which did meet
Sweet records, promises as sweet;
A creature not too bright or good,
For human nature's daily food;
For transient sorrows, simple wiles,
Praise, blame, love, kisses, tears and smiles.

And now I see with eye serene,
The very pulse of the machine;
A being breathing thoughtful breath,
A traveler between life and death.
The reason firm, the temperate will,
Endurance, foresight, strength and skill;
A perfect woman, nobly planned,
To warn, to comfort and command.
And yet a spirit still, and bright
With something of an angel light.

CHAPTER II.

BATHING AS A MEANS TO HEALTH AND BEAUTY.

The structure of the skin. The cleansing bath. The cold or hygienic or hardening bath. How one catches cold. The action of the cold bath. How to promote the reaction. Forms of the cold bath: The cold full tub bath; the cold half-bath; the cold sponge bath; the cold shower or douche bath. The reaction after a cold bath. Directions for cold bathing. The hardening effect of cold bathing. The Turkish bath. Sea bathing. The care of the complexion. Care of the ears. Facial massage. The use of cold cream. Face powders. General hygienic measures. The prevention of wrinkles and their removal. Chapped hands.

"Cleanliness may be defined to be the emblem of purity of mind."
—*Addison.*

THE uses and purposes of the bath are many. Bathing is resorted to as a cleansing measure, as a hardening process which renders a person less liable to catch cold, as an exercise, as a hygienic or curative procedure, and as a means to beauty.

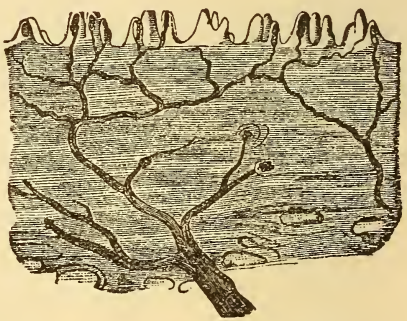
THE STRUCTURE OF THE SKIN.

In order to understand the action of the different kinds of baths, and the reasons for their use, one must be familiar with the structure of the skin. The skin is composed of two layers, an outer thin, horny layer called the cuticle and an inner layer which contains blood vessels, glands and nerves, and is known as the true skin. A separation of these two layers may be seen in the ordinary blister which raises the outer skin or cuticle away from the inner skin. The red, sensitive surface, which is exposed when the blister bursts, is the inner or true skin.

The *outer skin* acts as a protection to the more delicate parts beneath. Like all other tissues of the body it is composed of cells. (See Chapter XV.) New cells are continually being formed on the inner surface of this layer, while the old cells are being continually thrown off or shed in the form of dry, minute scales, appearing as a fine, white dust on the body and as dandruff on the head.

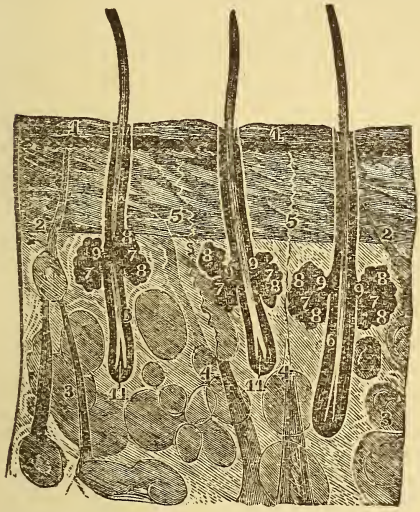
There are no nerves in this outer layer, which consequently has no sensibility. The epidermis contains the pigment which gives color to the skin. The different shades of color are due to the varying amounts of pigment present. The sun's rays stimulate the formation of pigment; the races living in the warmer countries have a darker skin than those residing in cooler climates; exposure to the sun during the summer months produces tan and freckles in a fair skin.

In the *true skin* are situated muscle fibres which have the power of contracting with cold, and of relaxing with heat. It is the former that gives to the skin the appearance of goose flesh. Running through the skin are various small nerves which receive sensations of touch, pain, heat and cold. The skin contains two kinds of glands: oil glands and sweat glands. The former are found all over the body, being especially abundant on the face. They are situated near the roots of the hairs and secrete an oily substance which keeps the skin soft and pliable. The sweat glands are also distributed all over the body, lying deep in the true skin. From each sweat gland a long, nar-

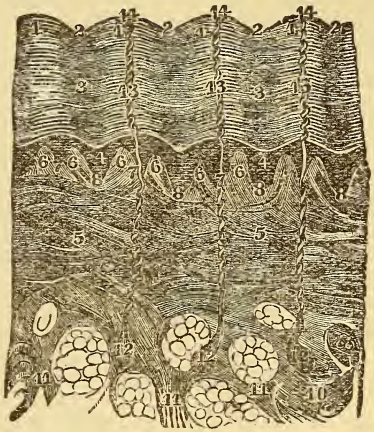


Section of the Skin (Magnified), Showing the Nerves.

row tube extends up through the skin and conveys the sweat to the surface of the body.



Section of Skin Showing the Hairs and Oil Glands.
(Magnified.)
7, 8, 9, Oil glands.
11, Root of hair.
6, Sheath of hair.



Section of Skin Showing the Sweat Glands and Ducts.
(Magnified.)
12, Sweat glands.
7, 13, 14, Ducts of sweat glands.

THE CLEANSING BATH.

It has been shown how the outer skin is constantly shedding dead, dry scales, and how the oily glands are depositing grease on the surface of the skin. Both the scales and the grease tend to collect on the skin, and with or without dirt to form a coating which stops up the mouths of the tubes from the sweat glands—often spoken of as the pores of the skin—thus preventing the proper functions of those glands. To remove this accumulation, which may be so fine as to be almost unnoticeable, a cleansing bath is necessary.

Warm and temperate baths are best suited to secure cleanliness. As water alone cannot dissolve the grease upon

the skin, the use of a pure soap is required. Baths should not be taken within two hours after a meal. As heat relaxes the blood vessels in the skin and opens the pores, a person is liable to take cold after a warm bath unless she goes immediately to bed, thus preventing exposure, or else takes a cold sponge or shower, followed by a brisk rubbing, which restores tone to the blood vessels, thus causing the skin to return to its normal condition.

THE COLD OR HYGIENIC OR HARDENING BATH.

A cold bath followed by brisk rubbing accustoms the blood vessels of the skin to variations of temperature and is therefore employed to stimulate the whole system and to harden the body against catching cold.

How One Catches Cold.—To understand the action of the hardening bath it is necessary to have some knowledge as to how one catches cold. When cold strikes the skin the blood vessels in the skin contract and send the blood to the internal organs. If the excess of blood remains in the internal organs for too long a time, a condition develops which we speak of as "cold," characterized by inflammation of the nose, throat, or bronchial tubes, and recognized by a cold in the head, sore throat, or cough.

The Action of the Cold Bath.—The object of the cold bath is to train the skin to become warm again after having been acted upon by cold.

As stated before, when the cold water comes in contact with the skin, the blood vessels of the skin contract. Later, the time depending upon the reactive ability of the individual, these same blood vessels dilate and thus allow the circulation in the skin of a greater quantity of blood than before. This is called the reaction, which consists in the restoration to the skin of the heat that has been abstracted. It is the most important element in all cold applications.

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THE ANGEL MOTHER.

In the coming of baby life mother life is often sacrificed. Yet mother love still hovers around the baby's couch coming from the unseen world to smooth the pillow and to protect her darling.

The benefit of the cold bath does not come from the chill that the cold water produces, but from this reaction or glow or feeling of warmth that follows the bath.

How to Promote the Reaction.—In a person not accustomed to cold bathing a brisk rubbing for several minutes after the bath is usually required to produce this reaction. As one becomes accustomed to the cold bath, however, the reaction occurs more and more quickly, requiring less and less rubbing, until finally it may occur as soon as the cold water strikes the body. The reaction is promoted or increased by the supplying of heat to the body before the bath by means of a hot tub or sponge bath or by a brisk rub, by active exercise during or after the bath, and by the administration of stimulants either before or after the bath.

Forms of the Cold Bath.—There are various forms of the cold bath, namely: the full tub bath, the half bath, the shower bath, and the sponge bath. Everybody is able to take a cold bath, but everyone cannot at once, without having been accustomed to it, take the same kind of a cold bath. Yet all, except the very old, can be trained so as to be able to take any form of the cold bath with benefit and without discomfort.

The Cold Full Bath.—The cold full bath is also known as the plunge or dip. A person merely jumps into a tub containing water at a temperature of 72° to 59° Fahrenheit and jumps right out again.

The Cold Half Bath.—In a cold half bath the person sits in a tub containing water of a temperature of from 85° to 70° Fahrenheit which reaches to the level of the navel. During the whole time of the bath, which should not last longer than one minute, the person rubs the front of her body with both hands, while someone else rubs her back with one hand and with the other dashes cold water on her shoulders.

The Cold Sponge Bath.—In the cold sponge bath the person may stand directly on the floor or in a foot bath containing twelve inches of warm water. She then, with a sponge or wash cloth, freely applies water of a temperature of 65° to 50° Fahrenheit to her arms, chest, back, abdomen, legs and thighs.

The Cold Shower Bath.—In the cold shower bath the water issues from a number of perforations called a rose, situated a few feet above the person. The chief benefit of the shower bath or douche lies in the mechanical stimulation of the skin, caused by the force of the water, which promotes the reaction. The pressure of the water should be not less than one atmosphere, that is, fifteen pounds to the square inch. When the force is too slight there is no mechanical irritation, but instead a chilling is produced by the evaporation of the light spray on the skin. There is, therefore, an objection to taking the douche by means of tubing attached to an ordinary faucet unless the required pressure can be obtained. In most city houses the pressure in the second story is not over ten pounds to the square inch, and in the third story it may be only three or four pounds.

The Reaction After a Cold Bath.—After every kind of a cold bath it is essential that a complete reaction take place, in other words, that the person become red and warm. To accomplish this the body after the bath should be rubbed with a rough towel until it glows. Persons not accustomed to cold bathing will be able to warm up after a bath if, before applying the cold water, they lie for about ten minutes in a tub full of water at a temperature of 95° to 100° Fahrenheit, or sponge the body for a minute or two with water of the same temperature, or rub the body into a glow.

General Directions for Cold Bathing.—The best time for taking a cold bath is immediately upon rising, while one is still warm from the bed. Before the cold bath is taken the

face and head should be wet with cold water to prevent the blood rushing to the head. If a person feels chilly after the bath and does not become warm after brisk rubbing she should go to bed until she has reacted, after which she may get dressed. There is no danger of taking cold after the bath if reaction occurs, as the warm blood coursing through the dilated vessels in the skin acts as a protection to the body. One can go out into the open air immediately after a cold bath that has been followed by a good reaction.

Persons not used to the cold baths may first employ water of a temperature a little higher than that given and then gradually reduce it from day to day. It is best to begin systematic cold bathing in the warmer months.

The Hardening Effect of Cold Bathing.—The hardening effect of the cold bath comes from its training the vessels of the skin to dilate after being contracted by cold, so that variations in the temperature and draughts, instead of chilling the body, will produce a feeling of warmth.

THE TURKISH BATH.

The Turkish bath is a form of physical exercise and is of hygienic importance in promoting the circulation, increasing the nourishment of the various tissues, and getting rid of waste matters. It is particularly beneficial to persons of sedentary life, who have no other form of exercise, to the obese, and to those of a gouty and rheumatic tendency.

Method of Giving the Turkish Bath.—After undressing, the person about to take a Turkish bath drinks a glass of hot or cold water and lies down upon a couch in a room of a temperature of 110° to 130° Fahrenheit. If she does not perspire promptly she is rubbed or given a hot full bath, a hot spray bath or a hot foot bath. After perspiration has begun the subject enters a room heated to a temperature of 150° to 200° Fahrenheit, remaining there but a few minutes until

she perspires very vigorously. She is then conducted to the shampooing room and placed upon a marble slab. Here she is first rubbed from head to foot with the bare hands or with Turkish mitts until all the loosened scales have been removed and then is shampooed with soap, the lather being rubbed in with a clean brush or with a mass of flax, manilla, horsehair, or other fibrous material. When the whole surface feels like polished marble the subject is given a cold douche at 60° Fahrenheit or less, after which, with a sheet wrapped around her, she lies down on a couch until dry. The effect is similar to that of other hot baths.

SEA BATHING.

An excellent exercise, as well as one of the most invigorating forms of the cold bath, is surf bathing. The impact of the waves and breakers upon the skin and the stimulation due to the salt in the water help to promote a reaction. Chilling is to be especially avoided, as it is a sign that the person is not reacting well; consequently as soon as a person feels cold or her teeth chatter or her lips look blue she should immediately come out of the water. As surf bathing is an exercise it should not be indulged in when one is overheated or exhausted.

The best time for the ocean bath is in the morning but the bath must not be taken until at least two hours after a meal. During her menstrual period and in the last months of pregnancy a woman must not indulge in sea bathing.

THE CURATIVE BATHS. HYDROTHERAPY.

Various forms of baths are employed as a means of treating diseased conditions. A cold tub bath is used in treating typhoid fever and fevers generally. The various sweat baths are used in many conditions, especially kidney

THE OLD, OLD STORY.

The exchange of sweet confidences and pledges of the holy affection is the first step in home making.

trouble and rheumatism. A description of these baths is not required in a work of this character.

THE CARE OF THE COMPLEXION.

The face should be washed carefully every morning and night and at least once or twice during the day. Too much washing, however, is harmful. The toilet of the face should begin with the thorough cleansing of the hands, as pimples and other diseases of the face may be caused by rubbing into the skin the minute microbes which are ever present in the hands. The face is then washed with clean water. It is best to use only cold water as it stimulates the blood vessels and improves the circulation in the skin in the manner described when speaking of the cold bath. Moreover, the use of warm or hot water is likely to produce chapping and roughening of the face, especially in winter when it is exposed to cold. If, however, after the face has been bathed with hot water, cold water be rubbed on it, the blood vessels will recover their tone and the injurious effects mentioned will be avoided. The best time for using hot water on the face is at night before retiring. If the water from the tap is hard, it may be rendered soft and more cleansing by the addition of a few drops of ammonia or a pinch of borax. The water should be applied with the hands, or with a wash cloth. The greatest care must be exercised in keeping the latter thoroughly clean. A sponge is usually objectionable, as it cannot, as a rule, be kept perfectly clean. A complexion brush may be used for the nightly scrub.

The use of *soap* on the face as a rule is unnecessary for a perfectly healthy skin. It may be permissible, however, but only in moderation, for persons with oily skins or those exposed to an atmosphere laden with dirt. The best time for the use of soap is at night before going to bed. Oftener than twice a day, night and morning, is positively harmful. After

being washed the face should be carefully dried with a soft towel.

Care of the Ears.—The ears should only be cleansed with a damp cloth and should never be washed with soap and water. Nothing should ever be put in the ear, and no one but a skillful physician should attempt to remove the wax.

Facial Massage.—It is a good plan in the morning, or better twice a day, to thoroughly knead and pinch the face with the finger tips. There is nothing better to stimulate the circulation of the skin and to improve the complexion. This is especially valuable when the complexion is sallow, and when there is a tendency to pimples and blotches. Rubbing the face with a silk handkerchief after the toilet has been completed gives it a pleasing polish which is not a shine. It sometimes is of advantage to rub a little alcohol or bathing whiskey on the face after the bath.

The Use of Cold Cream.—One way to cleanse the face during the day, is to simply wipe it first with warm water and then with cold water, and after this carefully dry it. Instead of this method, however, the face may be cleansed with cold cream in the following manner: A good cream made of wax and oil of almonds and containing neither vaseline nor animal fat, should be applied to the face and then wiped off gently with a soft cloth. Directly after the nightly scrub a simple application of cold cream may be made, the cream being thoroughly worked in the skin for about ten minutes with the tips of the fingers or the palm of the hand and then gently wiped off with a soft towel. This anointing of the face at night with cold cream or with a little lanolin or almond oil is particularly serviceable when the skin is unnaturally dry.

Face Powders.—If the skin is very greasy or if the weather is hot a small quantity of powder made of rice, tal-

cum, starch, bismuth, zinc oxide or magnesia may be applied to the face.

General Hygienic Measures.—Good health being necessary for a clear complexion, attention to diet, exercise, etc., are important aids in preserving a beautiful skin.

HOW TO PREVENT WRINKLES AND HOW TO REMOVE THEM.

There are two ways of preventing wrinkles. One is to cultivate a kindly and cheerful disposition, wrinkles frequently being caused by the setting of the muscles of the face in certain lines that occur when the temper is bad and the disposition sullen or melancholic. Occasionally, however, what appears to be a deep wrinkle may be merely a condition due to a clogged state of the pores.

The other method of preventing wrinkles is the care of the face in the manner just described, massage being especially important. In massaging to prevent or efface wrinkles, the tips of the fingers should be moved lightly up and outward with a rotary motion. Crow's-feet, or the fine wrinkles which appear around the eyes, are sometimes removed by pinching with the fingers of both hands. Frequently puckering the lips, as if about to whistle, may banish the small wrinkles around the corners of the mouth.

Chapped Hands.—The most frequent cause of chapped hands is the practice in the winter time of bathing the hands in warm water without subsequently rinsing them in cold water. Women who wash and scrub are especially liable to have the skin of their hands become rough and cracked, even when the outside air is only moderately cold. For many years the author has been treating and preventing chapped hands by means of a preparation, consisting of equal parts of alcohol, glycerin and rose water. This is to be rubbed freely and thoroughly on the hands at bed time and at other convenient occasions.

CHAPTER III.

THE CARE OF THE TEETH, THE NAILS AND THE HAIR.

Perfect Teeth are necessary from the standpoint of health as well as beauty. How to preserve the teeth: Powder, brush, mouth-wash. Cleansing and manicuring the Nails. Structure of the Hair. How to care for the hair: Brushing, combing, shampooing, massage. Curling the hair. Hints on hair dressing.

"My Love doth in herself contain
All this World's Riches that may far be found;
. . . . . .
If Pearls, her Teeth be Pearls, both pure and round;
If Ivory, her Forehead Ivory ween;
If Gold, her Locks are finest Gold on Ground;
If Silver, her Fair Hands are Silver Sheen."

—*Spenser.*

EAUTY is in no part of the body so much the result of care and attention as in the teeth, the nails and the hair: Decayed teeth spoil an otherwise beautiful face and only too frequently are the result of neglect; shapely hands may look unsightly because the nails are not well kept; and in many instances beautiful hair results from constant care.

THE CARE OF THE TEETH.

Perfect teeth not only add to the personal appearance but they are necessary to the general health in that they permit of thorough mastication of the food.

The teeth must not be treated roughly. They must not be used, for instance, for cracking nuts.

Particles of food remaining in the teeth after eating should be removed by means of dental floss or of a soft

GIVING THE BABY ITS DAILY OUTING.

The mother should exercise the greatest care in giving the baby sufficient outdoor life and under the most favorable conditions. Careful directions are given by the author, telling what every mother should know in order to secure the best results.

orange wood or quill toothpick, or by means of a tooth-brush and lukewarm water. At least twice during the twenty-four hours, best before going to bed and as part of the morning toilet, the teeth should be cleansed with a pure soap or a powder that will polish slightly without harming the enamel. A good tooth powder may be prepared from equal parts of powdered borax, precipitated chalk and powdered orris root.

The *brush* should not be too broad. It may be made of wood, badger skin or felt, but is best made of bristles. The bristles should be long, moderately stiff and elastic. They should be of uneven lengths and should not be placed too closely together. A new tooth brush should be soaked in cold water for several days before being used. After a brush has become soft or ragged from long use it should be discarded.

The teeth should be brushed up and down and across, both inside and outside. It is well to rinse the mouth with a mild antiseptic solution at bedtime or every night and morning or after each meal. An excellent *mouthwash* consists of tincture of myrrh, rose water and alcohol in equal parts, flavored with a drop of oil of almond, and containing formalin in the proportion of 1 drop to the ounce. Dissolving a teaspoonful of spirits of camphor and a teaspoonful of tincture of myrrh in the water makes another excellent mouthwash. Inasmuch as acids injure the dentine they should not form part of the mouthwash.

At least twice a year the mouth and teeth should be examined by a competent dentist so that any commencing decay may be detected in time.

THE CARE OF THE NAILS.

The nails are kept clean by means of soap, warm water, and a nail brush and the frequent use of a wooden, ivory or

metallic nail cleaner. The latter should always be blunt. A penknife or other sharp instrument should not be used as it scratches the under surface of the nail, thus making a place that favors the lodgment of dirt. It is better to use an orange stick or a soft wooden toothpick for cleansing the nails. An excellent instrument is a finger-nail sheathed in a folded handkerchief or towel. Once or twice a week the skin overhanging the root of the nail should be pressed back to prevent it encroaching too far over the half moon and thus becoming torn and ragged. For this also the orange stick should be used.

Manicuring the Nails.—The nails should be manicured once a week. For this purpose a nail file, a pair of nail scissors, an orange stick, a chamois nail polisher and a small box of nail powder must be provided. The fingers should first be dipped in warm, soft, soapy water, to which a few drops of cologne or compound tincture of benzoin has been added. The nails will be softened in a few moments, and then should be filed into a curve so that the whole nail will, as nearly as possible, approach the shape of an almond. The skin is now gently pressed from the root of the nail with the orange stick. The nails are next carefully dried and rubbed thoroughly with plain vaseline, after which they are polished with the chamois, care being taken not to heat the nails with the friction. The nails are once more rinsed and dried and are then rubbed with a little fine powder.

Instead of being filed the nails may be cut with a pair of scissors. Finger nails are always cut in a curved direction; toe nails should always be cut straight across.

Stains are removed from the nails by a solution of one part of acetic acid to sixteen parts of rose water.

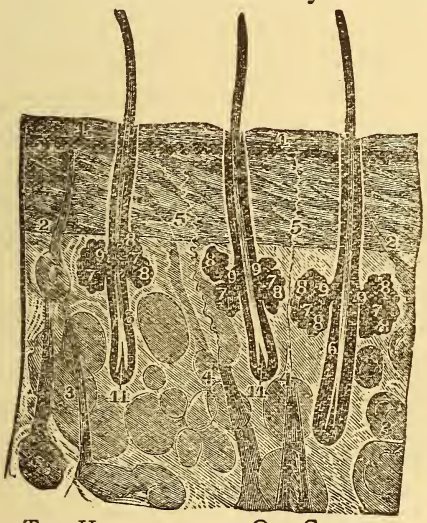
THE HAIR AND HOW TO CARE FOR IT.

The hairs lie imbedded in the scalp, each root being

contained in a long shaft into which the mouths of the oil glands empty, as shown in the accompanying diagram.

In order to preserve the hair, the scalp must be kept perfectly clean and free from dandruff, a condition which is obtained by shampooing, massage and daily brushing. Dandruff consists of the old dead cells of the outer skin or epidermis which have been thrown off by the scalp in the form of dry scales. It is most abundant when the scalp is unhealthy.

Brushing the Hair.—The hair should be brushed for several minutes every morning and night. The frequent stimulation of the circulation of the scalp produced by this increases the growth of the hair. Brushing also removes dandruff and distributes throughout the hair the natural oil which comes from the scalp. There is no necessity of brushing the hair a certain number of times, as some people seem to think. The brushing should merely be continued until a feeling of warmth, without soreness, is present in the scalp.



THE HAIRS AND THE OIL GLANDS (MAGNIFIED)

6. The hair shaft.
11. The root of the hair.
7, 8 and 9. The oil glands.

A stiff *brush* with little tufts of bristles, widely separated, should be used for adults; one somewhat softer must be employed for children and for those with very sensitive scalps. The brush, however, should not be so stiff as to produce any soreness. A wire brush should never be used as it breaks the hairs and pulls them out.

How to Comb the Hair.—Thorough combing does not cause a serious loss of hair as many women fear; it removes only the loose hairs that are ready to fall and whose place will soon be taken by new and more vigorous ones. The hair, nevertheless, must be treated very gently. The comb should be grasped between the thumb and first two fingers and drawn down the length of the hair. It should never pull the hair roughly in raking out the snarls. In some cases it is better to separate the snarls with the fingers.

The *comb* should be coarse and have smooth teeth, with blunt ends, set widely apart and with round edges where they are joined to the back. The old fashioned fine-tooth combs should be discarded, as they not only pull out the strong hairs but their fine points often irritate the scalp.

Cleansing the Brush and Comb.—Once a week the brush and comb should be cleansed by being shaken in hot water to which a little ammonia has been added. The brush should be held parallel to the surface of the water while being shaken. After they are washed it is often well to disinfect the brush and comb by placing them for ten or fifteen minutes in a solution containing a drop or two of formalin or twenty grains of boric acid to an ounce of water. The comb should then be carefully wiped between the teeth. The bristles of the brush must be wiped so that they will dry soft. Standing the brush on its bristles, while it is drying in the sun, will prevent the water soaking into the back and ruining it.

It is well not to use a comb and brush belonging to another person.

Massage of the Scalp.—Daily massage of the scalp will improve its circulation and increase the growth of the hair, especially when the scalp is pale and thin. The finger tips should first be moved vigorously over all parts of the scalp

and later, being placed firmly on the scalp, should move the scalp over the underlying skull.

Shampooing the Head.—Shampooing is necessary to cleanse the scalp and keep it free from dandruff. Although the loose hairs are removed by shampooing, those that are left are stimulated to a better growth. The frequency with which shampooing is required depends upon the rapidity with which dandruff and dirt collect, and thus varies from once a month to once a week or oftener. To shampoo the hair, tincture of green soap or any good, pure soap should be rubbed thoroughly into the scalp with the finger tips. A little warm water is then added and a good lather is made which must be rubbed vigorously into the scalp with the finger tips or with a stiff nail brush. After this the hair should be rinsed with warm water, using several waters until the last is perfectly clear. The danger of catching cold is averted if the scalp be then douched with cold water. The hair should be dried thoroughly with soft, warm towels, and, if possible, also with the heat of the sun or of a fire. Turkish towels should not be used as they are too rough, and tend to pull out the hairs. The hair should be shaken from time to time while drying. After the scalp is dried it should be massaged well with the finger tips until the head feels in a glow. The scalp always feels dry immediately after washing, but, as a rule, it soon becomes oily again owing to the improvement in circulation and the stimulation of the oil glands. When, on the other hand, it remains dry, it may be rubbed with pure vaseline, olive oil, or almond oil, which, however, should not be rubbed through the hair.

The *removal of lice and nits* from the hair will be described in detail in Chapter XXXI.

Curling the Hair.—Curling the hair is not objectionable if it is not done with too much vigor. Curl papers are not likely to do much harm if they are not put on so tightly as

to pull on the roots of the hair. The incessant use of the curling iron, however, has a tendency to make the hair unnaturally dry and probably spoils the ends.

Hints on Hair Dressing.—In dressing the hair care must be taken not to make violent traction upon the roots, which has a tendency to loosen the hair and cause it to fall. The hair should be rolled loosely and not squeezed into a tight knot. "Rats" and false hair are said to injure the growth of the hair by overheating the scalp. The assertion is also made that tangling the hair, by combing it in the wrong way in order to make the pompadour stand up, is injurious and loosens the hairs, which are more apt to be broken off.

Mrs. Symes says that every woman should discover the most becoming way of wearing her hair, and then stick to it no matter what fashion may dictate. "Suitable and becoming hairdressing," she writes, "may redeem even a very plain face, and it is deplorable to see the hair ill treated by neglect or dragged into a style which makes it unbecoming to the face it should adorn.

"A woman may have an ill-shaped mouth or crooked nose, or little eyes, and still be pretty, if her hair is becomingly arranged, but if all her other features are good, and she has an extremely high forehead with the hair growing upon it in an awkward line, she will never be more than a plain looking woman, unless she takes means of compromising this enemy to good looks . . . . .

"Study yourself and you will be surprised how you can improve, not only the beauty of your face, but, when wearing evening dress, even the appearance of your neck and shoulders.

"By dressing the hair low on the nape of the neck the thin woman can take a great deal off its length if she wishes to do so."

CHAPTER IV.

THE FIGURE—HOW TO DEVELOP A GRACEFUL CARRIAGE.

Standard of Beauty in the Figure. The Prevention of Deformities. How deformities are acquired. School a factor in producing deformities. How to detect deformities. Mechanical means to prevent deformities. How to improve the figure. The correct standing position. The position to be assumed when sitting. The proper method of walking. Exercises for developing a graceful carriage. How to utilize housework in developing the figure. Exercises for developing the figure.

"The human form divine."—*Pope.*

A BEAUTIFUL figure is seldom the work of Nature unaided. Through want of proper exercise and consequent absence of muscular development, a perfect frame may not appear to advantage. Muscular weakness, due to the same cause, combined with faulty positions, may even produce noticeable deformities. A body perfectly formed loses much of its beauty if not associated with elegance of poise and grace of carriage.

On the other hand, one less endowed by Nature may possess a striking figure, owing to her physical development and general bearing, which have both been acquired. It is in the power of every woman to attain a graceful carriage and well-developed figure and to avoid deformities.

Standard of Beauty in the Figure.—To say that there is but one standard of beauty in the human form would be indeed wrong. The types are various. One, like the Venus de Milo, is tall and majestic; another delicate and diminutive, like the Venus de Medici.

There are certain measurements, however, which have

been accepted by artists generally as being those of the ideal female figure. The height of such a model is five feet five inches; the waist twenty-seven inches; the bust, under the arms, thirty-four inches, and over the arms forty-three inches. The circumference of the upper arm is thirteen inches, of the wrist six inches, of the thigh twenty-five inches, of the calf of the leg fourteen and a half inches, and of the ankle eight inches. The weight of this ideally proportioned woman should be one hundred and thirty-eight pounds.

These dimensions are somewhat larger than those of the Venus de Medici, which is regarded by many authorities as the type of perfect female beauty.

The height of this figure is five feet, less than that of the average American woman. The head is small and the face oval in shape, the breadth being two-thirds of the length. The waist measures thirty inches in circumference and is four inches in length, being a much larger waist than that of the fashionable woman of to-day.

Deformities May Be Avoided.—Such perfection is necessarily a gift of Nature. Many irregularities, however, occur in the figure which are due to deformities that might have been prevented, and to faulty positions that were assumed through ignorance.

THE PREVENTION OF DEFORMITIES.

It is always much easier to prevent deformities than to remedy them after they have occurred.

How Deformities are Acquired.—Many deformities occur during infancy and are directly due to the ignorance of the nurse or the mother.

Children who are improperly nourished often develop a condition known as *rickets*, in which all the bones are

THE PRIDE OF WOMANHOOD.

Health and beauty require that intelligent attention be given to the care of the hair, skin, teeth and nails. These are woman's pride. Directions are given in this volume.

soft. When a child suffering from this disease starts to walk, its legs always become bowed.

Improper methods of *holding the baby* may lead to serious deformities, especially of the spine. The proper way in which an infant should be held when carried about and when nursed is described in Chapters XXIV and XXIX. The back and neck must always be supported. It is not well to hold the baby in the arms too much. The Hindoo nurse seldom or never takes the infant on her knee or in her arms. She puts it down on the floor or on a mat, where it lies quietly until it gets sufficient strength to roll about.

Improper clothing may also produce deformities, corsets and tight lacing being especially harmful.

Faulty position, however, is the most common cause. The proper position for standing or sitting will be described later in this chapter.

Faulty positions in bed lead to curvature of the spine, especially in persons who are weak or debilitated. One should not always sleep on the same side, but should change about. Soft beds and high pillows are especially liable to produce deformities. A hair mattress should be used, with a rather low, elastic pillow.

Spinal curvature is also frequently caused by *carrying books* or other weights always on the same arm. When these objects must be carried, they should be supported first on one arm, and then on the other.

School as a Factor in Producing Deformities.—A curved spine is usually acquired in school, owing to the fact that children of all sizes must sit at a uniform-sized desk.

The desks and seats in the school-room should be adjustable, so that they can be fitted to any child. The desk should be one inch higher than the pupil's elbow and should have an inclination of about ten to fifteen degrees, its edge

projecting slightly over the edge of the seat. The seat should be not less than eighteen inches broad, so as to support almost the whole thigh, and of such a height that the feet rest firmly on the floor when the knee is bent at a right angle. With the child sitting in an erect posture the distance from the eye to the desk should be sixteen inches.

How to Detect Deformities.—The deformity should be recognized and corrected before it becomes too marked. As it usually comes on gradually and insidiously, it at first attracts little attention.

The first thing to be noticed will be a considerable decrease of muscular power and a feeling of general depression and fatigue from the slightest exercise. The child is listless and inactive and has a tendency to lounge and loll about in decided contrast to the usual activity of youth. There is a disposition to stoop and to appear awkward, careless and ungraceful.

If the girl be examined, the muscles of the back will be found wasted and the ribs will be plainly seen. The shoulder-blades will be prominent, and one will be a little higher than the other. The knobs of the spine will project and, instead of being in a straight line, will form a curve. In order to bring this out it will be necessary to mark the skin along the knobs of the back with ink or with a thick pencil, or to rub it until it shows a blush of red. If a plumb-line be then dropped from the top of the head along the back while the girl stands as erect as she can, the curvature will be plainly discerned. The deformity may be so marked that it can be easily seen without the use of a plumb-line.

How to Prevent Deformities.—Various *appliances* have been used at different times to prevent deformities. Shoulder braces at one time were much used, and stays and corsets were also very popular. Even backboards were employed,

and certain ingenious collars to hold up the head were attached to braces, stays or back-boards. A century ago education chairs, stocks, inclines, horizontal planes, the windlass, stretching chairs and braces were the means of making young women grow up with straight figures. All such mechanical contrivances are very injurious and although they may hold the back straight for the time being they really tend to increase the deformity. The body is held erect by muscles. A muscle is developed and strengthened by use and weakened by disuse. If an arm be kept in a sling for several weeks its muscles will become thin and wasted and in time the arm will lose its power. In the same manner braces which keep the spine straight take the work from the muscles, which thereby become weakened. In consequence the girl is unable to hold herself straight without the continued use of the brace.

The proper method to prevent deformities and to correct them is with *appropriate exercises* to strengthen the muscles which support the part, and thus by natural means to overcome the deformity.

HOW TO IMPROVE THE FIGURE.

There are many ways of developing a good figure and a graceful carriage. First and most important, is the assuming of a proper position while sitting, standing or walking, while at rest and while at work. There are many exercises, with and without mechanical contrivances, for improving the figure and there are many sports and games which will aid in its development.

The Correct Standing Position.—Without a graceful carriage a beautiful form may appear to disadvantage. Not only is correct poise beautiful, but it is in itself of educational and hygienic importance. In a slovenly manner of

standing the muscles of the back and abdomen do not get their proper share of work, and the person becomes readily fatigued. The most common fault with women is that in standing they project the abdomen. In an endeavor to prevent the shoulders becoming round they throw back the upper part of the body, at the same time pressing forward the abdominal walls. This position usually tires the back muscles and causes many of the aches and pains felt in this region.

To stand straight, a girl should place her feet almost parallel, the heels being one to six inches apart, as may be easiest, the toes turning outward a little, as is most natural and comfortable for the individual. She should let her arms hang easily by her sides. When the chest is drawn up to a high position, all the other parts of the body naturally fall into their proper relations with it. The weight of the body should be thrown forward on the ball of the foot and toes, rather than on the heel.

The ease and balance of this position may be tested by rising on the toes as far as possible, maintaining the position for a moment, and coming down gently until the heels touch the floor. When this can be done without losing the balance, the proper position has been assumed; but if the person has to take a step forward or backward to recover her equilibrium, the center of gravity is misplaced and the position must be resumed until, after a few attempts, the proper position is found and kept. In this position the shoulders, hips and ankles will be in a straight line. The correct carriage may be tested by passing the hand over the back; if the ends of the shoulder-blades can be felt, the carriage is correct.

The Position to be Assumed When Sitting.—A girl should sit on the whole seat of a chair, not just on the edge. When she is seated back in her chair, the seat should be

about three-fourths as deep as her thigh. Her feet should rest easily upon the floor, or on a footstool if the chair is too high. The erect position is maintained by drawing up the crown of the head.

A girl should never lounge in a chair or allow herself to flop. If she is too fatigued to sit straight she should lie down until she is rested. She should never sit in a chair resting on one foot or lean her head upon her hand or bend the head forward or stoop at the shoulders. She should always lean forward from the hips and not from the waist. Unless proper postures are maintained no amount of exercise can overcome the deformities that will be produced.

The Proper Method of Walking.—In walking, the correct standing position must first be assumed. A girl should hold her chin up, her chest forward and her abdomen in. The shoulders will then fall into their proper position and not have to be pushed back. In walking up stairs she should hold herself erect, keeping the back, neck and head in a straight line. She should not bend forward in passing from step to step. She should never run up stairs, but should place each foot flat on the step, taking deep breaths as she slowly ascends. She may walk down stairs very gracefully by not springing upon the steps, but by bending the knees and dropping the weight from step to step with as little motion as possible.

EXERCISES FOR DEVELOPING A GRACEFUL CARRIAGE.

The remarkably erect figures of the Turks, mentioned by travelers, have been ascribed to the wearing of a heavy turban. About two centuries ago a Frenchman named Andry, having noticed the erect attitude of milkmaids who carried small pails on their heads, applied the same principle to the improvement of the figure. He caused

a weight, such as a powder box, to be balanced on the fore part of the head where it would be most apt to fall, thus exercising the muscles of the back and neck. He introduced this balancing as a game in which children might be interested. It was adopted in a convent for girls, a forfeit being demanded whenever the object was dropped.

Probably the best exercise to develop a good carriage is to carry around on the head a light object, such as a bean bag. This should be balanced first in the correct standing position and then as the girl walks about the house and up and down stairs.

HOW TO UTILIZE HOUSEWORK IN DEVELOPING THE FIGURE.

If housework tends to spoil the figure it is because no attention is paid to the positions assumed. Yet by observance of hygienic principles housework may be often utilized in developing the figure. Many girls spend most of their time in working about the house and have little opportunity for games and sports or sometimes even for ordinary exercise. It is of extreme importance, therefore, that they utilize their work as a means of improving their figures rather than allow them to become deformed by it.

When sitting at any kind of work, such as sewing or paring apples, a woman should avoid the temptation to stoop. It is so easy to curve the back and shoulders and on getting up to sometimes forget to straighten out again. After several years of such bad habits the shoulders will be round, the head will protrude forward, the neck will be thin and the chest flat and narrow. When standing to one's work, the erect posture must be maintained. Kneading bread, with the shoulders thrown back, will develop splendid arm muscles. For this, however, the molding-board must be at the proper height. One of the best physical

exercises and one that gives the shoulders splendid development is the old-fashioned scrubbing on hands and knees. One must remember, however, to keep the back straight, the chest forward and the abdomen drawn in. It is well to develop both sides equally by first using one hand and then the other. Likewise when sweeping, the broom should be changed from side to side to prevent one-sided development. The same principle must be applied when ironing. In this case it is most important to have the ironing-board at a comfortable height.

One should be properly dressed for housework. The best costume consists of a loose flannel blouse and short skirt made like a gymnasium suit, with the collar loose and low. Corsets and high-heeled slippers are entirely out of place.

EXERCISES FOR DEVELOPING THE FIGURE.

Every woman should devote at least a few minutes during the day to exercise of some kind. Walking, running, climbing, bicycling, horse-back riding, rowing, canoeing, swimming and dancing are excellent forms of exercise. Playing at lawn tennis, tether tennis, golf, basket ball, bowling, fencing and punching the bag also greatly aid in developing the figure as well as in preserving the general health. These various forms of exercise are described in detail in Chapter VII.

Where a woman is unable to indulge in sports and games, as is so frequently the case, she can at least spare a few minutes for certain simple exercises which require no apparatus. The gain in health and in physical appearance will more than compensate her for all the time she spends.

Breathing Exercises.—One of the chief benefits of all exercises is the development of deep breathing that occurs

with them. Breathing exercises themselves are very important. Proper expansion of the lungs not only develops the chest and thus improves one's health, but it helps to ward off many diseases. If the lungs are always supplied with a full amount of air they are less liable to be attacked by consumption. Those who are unable to develop deep breathing by means of sports and games can at least practice breathing exercises for a few minutes each day. These exercises are especially important to those with poor chest expansion, and to persons just recovering from pneumonia or pleurisy.

In all breathing exercises the chief thing is to inhale deeply and slowly until unable to get any more air in the lungs. A woman will receive more benefit if when the chest is full she will hold the breath while she counts ten.

These breathing exercises may be combined with various movements. From a position down at the sides the arms during the inspiration may be raised slowly, with the palms up and the arms back and extended, coming together above the head just as the inspiratory act has been completed. The breath should be held for ten seconds and then let out slowly through the mouth, the arms at the same time being brought down in front until they reach their first position as the last bit of air is forced out. This should be repeated five or ten times.

The best time for the exercises is in the morning before breakfast. They should be taken in a room well ventilated, but free from draught, in which the windows are down from the top and open from the bottom. Loose-fitting clothing or the night dress should be worn, the feet being bare or stockinged to allow the greatest movement. Before beginning the exercise the woman should evacuate her bladder, clear her nose of all mucus and drink a glass of water that is not too cold.

THE WOOING—ROMEO AND JULIET.

From earliest days poets have sung of the happy moment in a woman's life when she hears from her lover avowing his devotion: "When my lips meet thine thy very soul is wedded into mine."

Toe Rising.—The woman should stand with her hands on her hips, her body upright, her chin high and her toes turned out. With the heels together she should rise slowly on the balls of her feet, keeping the knees straight, and should then lower the body steadily until the heels touch the ground. She should repeat these exercises from fifteen to twenty, or even to fifty times.

Twisting Exercises.—In the same position as in the first exercise, turn the body first to one side and then to the other, rubbing the hands across the abdomen at the same time, and keeping the head in line with the body. This may be repeated from five to ten or fifty times.

Bending Forward and Backward.—Standing in the same position, bend forward as far as possible, leaning the face forward and kneading the abdomen with the hands. Then bend backward, allowing the chin to rest on the chest. This may be repeated five to ten times, or gradually increased to thirty times.

Bending to the Side.—Bend the body to the side in a straight line, without bending forward or backward, until the extended hand touches the knee, the other hand being brought into the opposite arm pit. Then bend to the other side, reversing the conditions. This may be repeated five to ten times.

Elevating the Shoulders.—This is a quick movement, excellent for correcting round shoulders and expanding the chest. Elevate the shoulders as high as possible without drawing in the head; then lower them as far as possible. Then draw the shoulders forward, crossing the arms at the wrist; then draw the arms up in a cross position, and as soon as they reach the level of the chin separate them and carry them forward in a circle on each side of the body.

Windmill Exercise.—Bend the body at right angles to the legs and keep in this position throughout the exercise.

With the right hand touch the floor in line with the right foot, bending the right knee. At the same time extend the left arm straight above the head. Then straighten the right knee and carry the right arm up above the head, at the same time bringing the left hand down so as to touch the floor in front of the left foot and bending the left knee. The body must not be raised during this exercise which may be repeated five to ten times.

The Deep Knee Bend.—With the heels raised, lower the body as far as possible by bending the knees, while holding the trunk erect. Rise, straightening the knees and bringing them together, not allowing the heels to touch the ground until the legs are straight. This is to be repeated ten to twenty-five times.

Floor Exercises.—The following exercise strengthens the abdominal muscles and is of great value in preventing constipation and even rupture. Lie at full length upon the floor with the hands under the hips. Raise both legs slowly without bending the knees until they are at right angles with the body. Then slowly return them to the original position. Repeat this five to ten times.

Lying as before, first bring one leg slowly to the position at right angles with the body and then as it is returned to the original position bring up the other leg.

The following exercises may be performed after the abdominal muscles have been strengthened by the two given above: Lie at full length on the floor, with the hands under the hips, as before. Bend the knees and bring them up on the abdomen as far as possible. Then return them to the starting position. Repeat this movement ten times, and then again repeat it, bringing the knees up on the abdomen, one at a time, for fifteen or twenty times.

Lie full length on the floor, with the hands clasped behind the neck, the elbows on the floor. Bring the elbows

in slowly, bending the body forward until the face touches the knees. Return to the original position. This must be done without taking the feet from the floor. At first it will be necessary to have some weight on the feet, or to hook the toes under a bureau or chair. Repeat this exercise several times.

Forward Drop.—Kneel on the floor, placing the hands fifteen inches apart, and stretch out the body and legs. Lower the body as far as possible by bending the elbows, keeping the back stiff and the legs extended. Then push up the body until the arms are straight. Repeat this four or five times at first, increased to ten or twelve times as you become more accustomed to it.

A similar movement, though somewhat less difficult, may be performed between two upright bars or in a narrow doorway. Stand about eighteen inches from the bars or door jams, resting the open palms against them, and by bending the elbows allow the body to drop forward through the doorway. Then push the body back to the original position by extending the arms. Repeat several times.

CHAPTER V.

CLOTHING FROM THE HYGIENIC STANDPOINT.

The Hygiene of Undergarments: The material that preserves heat best; the best absorbent of moisture; the best material for underwear. Stockings. Outer Garments: Materials for various conditions; the influence of color. Constriction to be avoided. Shoes. Beauty in Dress. The colors that may be worn by the different types. Wraps and Coats. Waterproof Clothing. Non-inflammable Clothing.

"A kind and gentle heart he had,
To comfort friends and foes;
The naked every day he clad,
When he put on his clothes."

—*Goldsmith.*

A STUDY of clothing must include a consideration of the various objects for which clothing is worn. These objects are the protection of the body against cold, wet, and injury, the absorption of moisture from the skin, and the improvement of the personal appearance. The proper material and color of a garment depend largely upon the particular purpose for which it is worn.

Thus underwear is made of a different material from an outer garment. The color of a dress, too, is chosen, as a rule, with reference to the prevailing style or whether it is becoming to the wearer.

There are two conditions to be fulfilled by an *undergarment;* it must keep the body warm and it must absorb moisture.

The Material that Best Preserves the Heat.—A garment keeps a person warm by not permitting the heat of the body to escape; consequently it must be what is called a poor conductor of heat. The power of preserving the heat of the

body depends chiefly upon the nature of the material, the texture of the garment, and the number of garments worn. Wool and silk are poor heat-conductors. Cotton and linen conduct heat well. As air is a very poor heat-conductor, the greater the amount of air in the meshes of a material, that is, the looser its texture, the warmer the garment will be. For the same reason when several garments are worn one over another the layers of air confined between them will act as non-conductors of heat and keep the body warm.

The Best Absorbents of Moisture.—Wool and silk absorb moisture very easily; cotton and silk very poorly. Wool and silk absorb the perspiration which then slowly evaporates without producing any reduction in the temperature of the skin; cotton and linen, on the other hand, allow the perspiration to pass through them to the external surface, where it rapidly evaporates, causing thereby a loss of heat and sometimes producing a chill.

The Best Material for Underwear.—The best material for underwear consequently is flannel or wool, as each is both a poor conductor of heat and a good absorbent of moisture. If of a finely combed texture they will not irritate the skin. Silk is as good, but more expensive. When cotton or linen is woven loosely, with large meshes, it preserves the body heat owing to the poor conductivity of the air contained in the meshes.

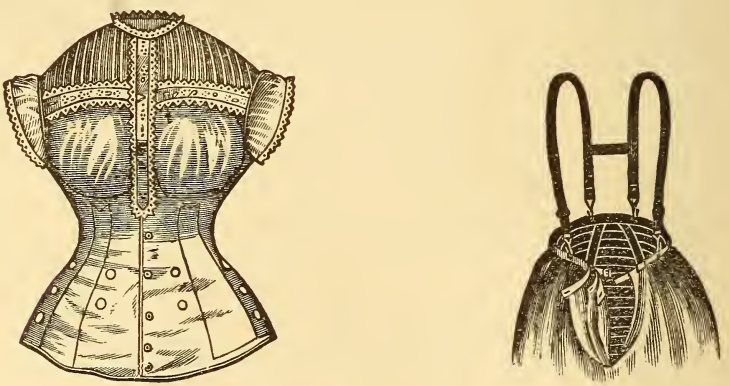
Stockings.—Stockings should be made of wool, or at least have woolen feet, in order that they may rapidly absorb the moisture from the feet. They should not fit too snugly, but should be large enough to allow the feet to expand when walking. They are best made in rights and lefts with straight inner edges or, better still, with a separate compartment for the great toe. Underclothing should always be removed on retiring and be allowed to air during the night.

Clothing should not be too heavy. Light, moderately loose garments are warmer than heavy, close-fitting ones, affording more space for the non-conducting layer of air.

Materials for Various Conditions.—For use in hot weather, cotton and linen are the best materials for *outer garments;* for cold weather wool is the best.

The Influence of Color.—Some colors absorb and reflect the heat of the sun's rays more than others. White absorbs the heat less and reflects it most; consequently garments of that color are the coolest. Yellow is the next coolest color and then come red, green, blue and black, the last absorbing the heat most and hence being the warmest color. Starching and ironing close the air spaces in clothing, and by thus rendering it more impervious help to render it warmer. Starched garments are therefore more comfortable in cold weather and unstarched in hot weather.

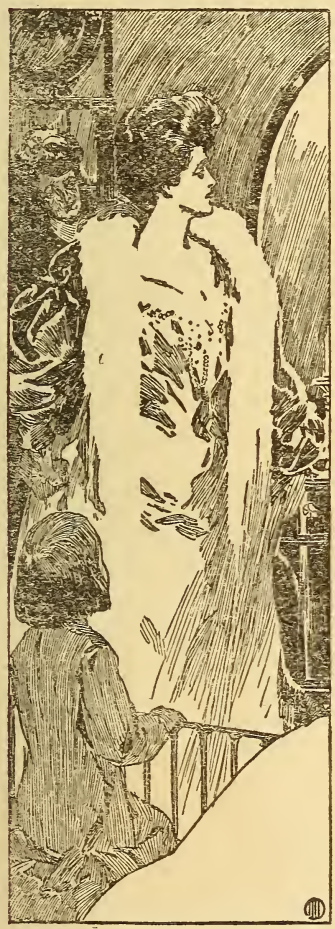
Constriction to be Avoided.—Skirts should not be supported from the waist, but should be suspended from the shoulders by means of a waist or suspenders as shown in the



Waist and Suspenders for Supporting the Skirts from the Shoulders.

accompanying figures. Clothing should not interfere with the breathing, or compress any of the abdominal organs. The article of a woman's dress that has caused more sick-

ness and injury than any other is the corset. The ordinary corset should never be worn. The hygienic corset, or one of the corset waists now on the market, such as the equipoise or Ferris waist, is not so harmful.



THE TOILET.

Circular elastic garters interfere with the circulation of the blood and frequently produce varicose veins; consequently they should never be worn. The stockings should be fastened to some part of the underclothing.

Shoes.—The shoe should have a flat sole and should be nearly straight on the inner edge and curving gently on the outer side. The *heels* should be broad and low. When the heels are high they weaken the arch of the foot by causing a wasting of the muscles and ligaments. The shoe should be three-fourths of an inch longer than the foot; the latter works forward in walking and unless it is given sufficient room will develop corns and bunions. The shoe, however, should not be so loose as to allow the heel to rub. Shoes made of plain leather permit the proper ventilation of the feet. Patent leather shoes, however, are impermeable to air and do not allow sufficient evaporation of the perspiration of the feet; consequently they should not be worn continuously. It would even be better not to wear them at all.

As rubber also will not permit air to pass through it, boots and overshoes of this material should not be worn longer than necessary.

BEAUTY IN DRESS.

When dress is regarded from the standpoint of improving the personal appearance, there are many things besides material and texture to be taken into consideration, the most important of which is color. There are certain types of women who appear to better advantage when arrayed in certain colors. On this account a gown which appears beautiful upon one woman may seem the opposite when worn by another. Every woman should understand her own type or style of beauty, and dress accordingly. There are many books which give the different colors that can be worn by women when the hair, eyes and complexion are of certain shades. These teach one to make a much closer differentiation than just according to the color of the hair. For instance, a distinction must be made between red hair with blue eyes and red hair with brown, gray, or green eyes. The following colors are suggested by Miss Oakley for the various types:

The Black-Haired Type.—Black hair is most frequently combined with *black eyes* and *sallow complexion.* The best settings for such a combination are black, relieved with transparent white, a dark, warm gray and occasionally a flame color or a dull red.

When the black-haired type has *pale skin* and *blue eyes* the possible range of color is wide, although yellows and greens are absolutely excluded. Blue is the best color, blues of the sapphire shades, and blues of the Chinese colors. The dark reds, such as cardinal, may be worn, also very pale shell-pink, blue-grays and white, both cream and blue-white, and black, both solid and transparent.

The Girl with Red Hair.—The following colors are

possibilities for the entire class of the red-haired type. White of a creamy tone, black, invisible green, rich bottle-green, rich blue-green, olive-green, gray-green, stone-gray, claret color, maroon, plum color, amethyst, brownish purple, pale yellow, gold color, pale amber, and the reds approaching amber. All the girls of this general type, however, must avoid blues of all shades, blue-white, pale green, scarlet, all bright reds, bright rose-pink, all violet-pinks, blue-purple, and lavender.

Some distinction must be made in regard to the different variations of this type. Thus the woman with *blue eyes* and red hair should wear chiefly the greens, stone-gray and yellow, the creamy white and the black; those with *gray* and *green eyes* may, in addition, dress in the browns and purples, while the *brown-eyed* variety look best in the dark reds and ambers, although they may wear any of the colors belonging to the general type.

The Brown-Haired Woman.—The typical example of this type, *with warm, brown skin* and *brown eyes,* may choose any of the following colors: all reds, amber, all yellows, cream-white, brown, maroon, olive-green, rose-pink in small quantities, all warm blue from dark to light, tan colors, fawn colors, tea colors, and flame colors. She must, however, avoid all cold and pale blues, light green, all cold greens, pale violets, violet-pinks, grays, purple, black, blue-white, and even the transparent blue-white and gray of white muslin.

A girl with the same color eyes and hair, but whose *skin* is *of a thick, creamy white,* may wear black, cream-white, purple, violet, amber, olive-green, light or dark reds, especially dark reds, all the rich, dark red purples and maroons, some dark blue-green like peacock, russet, and rose-pink. The following colors, however, are impossible with this tpye: blue-white, all light and cold blues, grays, mauve-pinks, cold yellows, and pale greens.

The chestnut-haired woman with *fair skin* and *blue eyes* may employ almost any color except the mauves and mysterious pale colors, but the chestnut-haired woman with *gray eyes* or *green eyes,* especially if her *complexion* be *dull* or *sallow,* must choose more carefully. She may wear olive-green, relieved with pale pink, white with contrasts of old gold and yellows, dark and light blues, purple relieved with white, lilac combined with burnt cream, and black with contrasts of green, especially the yellow greens.

The Blonde Type.—In quite contrast to the warmer types is the *cool blonde,* with her thin, white transparent skin, her pale golden or flaxen hair and blue or violet eyes. This girl may wear jet-black, blue-black, cold, pale green, blue-white, cold grays, all cold blues, heliotrope-purples, cold, pale, violet-pink, cold lilacs, and lavender, but must avoid all reds, warm blues, yellow greens, olives, browns, yellows, warm violets, ambers, cream-white, fawns, tans, and russets.

Somewhat different from the type just mentioned is the *golden blonde,* of which there are two varieties. The golden blonde with the *warm, roseate skin* usually has hazel eyes, and can select her colors from turquoise-blue, rose-pink, warm greens—from dark to light, cream-white, reds, yellows, ambers, purple, violet, black, warm grays, fawns, brown, and flame color. Although she can wear practically everything, she does not look so well in cold blues, mauve pinks, cold greens—light or dark, blue-white, lavender, cold lilacs, and cold grays.

For the golden blonde with gray, green, or light hazel eyes and a luminous *creamy white skin* quite a different choice of colors must be given. This type can wear olive-green—light and dark, black, cream-white, all soft yellow greens, stone-grays, blue-grays, gray-blue, turquoise-blue, pale peacock-blues, transparent white, mauve-pinks, amethyst—light and dark, heliotrope in all shades, and pale

amber. She must avoid orange, brilliant yellow, scarlet, tan color, heavy blue-green, blue-white, blue-purple, cold blues, lavender, fawns, frank pinks, and all reds from dark to light.

When the Hair Turns Gray.—There is a type with *greenish gray hair* seen sometimes with *brown skin* and brown or dark gray eyes. Any of the following colors go well with such a combination: dark greens, both olive and blue greens, browns, including a light brown approaching fawn, amber, all rich yellows, yellow-pink, dark reds, the warm, rich dark blues, purple, brownish purple, and cream white. The following colors, however, cannot be worn: all cold and pale greens, all cold light blues, grays, mauve-pink, cold lilacs, blue-white, cold yellows, like sulphur color, and black.

When the gray hair is accompanied with a *lighter, clear complexion,* and with *color in the cheeks,* the browns must be entirely omitted, although black and gray may be used. The best color for a *pale complexion* and snow-white hair, with gray or blue eyes, is entire black. For a prematurely gray-haired woman with blue eyes and a *fine, clear complexion* either pale or ruddy, the best combinations are blue and white, and pale rose-pink and black, although purple and even green may be worn.

WRAPS, COATS AND THE LIKE.

As wool is impermeable to wind and is of a very low heat conductivity, it makes an excellent protection against the cold; consequently it is the best material for wraps, coats, and shawls. One should not wear mufflers and fur boas around the neck as they render the skin sensitive and increase the liability to catch cold.

Before or immediately on entering a warm apartment all coats and wraps should be removed. In cold weather it is sometimes well, on coming in from the street, to wait a few minutes in the vestibule before entering the warm house, so

as to make the change from one extreme to the other more gradual. In this way there will be less likelihood of catching cold.

WATERPROOF CLOTHING.

Rubber, being impervious to air as well as to water, should consequently be worn as little as possible. Raincoats made of cravanette or of wool that has been rendered waterproof by certain processes, are therefore much preferable to India rubber garments and mackintoshes. Rubber overshoes are often necessary to protect the shoes, but they should never be worn unnecessarily and should be removed as soon as the person enters the house. The same may be said of mackintoshes and gossamers.

NON-INFLAMMABLE CLOTHING.

It is said that cotton and linen clothing may be rendered fireproof by being immersed in a starch solution containing a heaping teaspoonful of powdered borax to each half pint of the solution. The fabric is said not to be injured thereby, nor is any disagreeable odor imparted to it. It may be washed and ironed just as readily after the immersion as before. The recommendation has been made that the clothing of those who are exposed to the risk of fire in their daily occupation be treated in the above manner.

A REAL MADONNA

Is one who is able to transmit to her children health and vigor in their infancy. Beauty will also be found with health. Such a mother observes carefully the laws for perfect motherhood.

CHAPTER VI.

FOOD AND DRINK.

The hours for meals. Taking sufficient time to eat. Rest after meals. The different kinds of food and how to prepare them. Animal foods. Milk and milk products. Eggs raw and cooked in various ways. Meats and how to prepare them. Fish and shell-fish. The relative digestibility of different animal foods. Vegetable foods: Sugars, cereals, roots and tubers, green vegetables, fruits. The different beverages: Drinking-water, coffee, tea, cocoa, chocolate, alcoholic drinks.

"In general, mankind, since the improvement of cookery, eat about twice as much as nature requires."—*Franklin.*

THE object of food is to supply new matter to the tissues, which are constantly undergoing waste and to furnish the body with the materials for the manufacture of muscular force and bodily heat.

The character of the food a person shall eat depends a great deal upon the mode of life. One who takes a considerable amount of bodily exercise requires a different kind of diet from one who leads a sedentary life. People usually eat more than is required to make up for the waste in the tissues. Children need to provide material for growth as well as for wear and tear, and consequently must eat much more proportionately than adults. But as they get older they continue this habit of eating very generously, although the excess is no longer needed for growth. In this habit lies the cause of much of the indigestion from which so many women suffer, and of the obesity that is so common

at middle life. In old age still less food is needed, because less force is then being exerted. The great fault with most Americans, among the rich as well as among the poor, is that they eat too hastily and partake too freely of animal food. Meat should not be eaten oftener than twice a day, once a day being quite sufficient.

The Hours for Meals.—The time of the principal meal will depend on the character of a person's work. It is customary in America to eat three substantial meals a day. People in the rural districts and many classes in the cities, including the great bulk of wage earners, eat breakfast immediately after rising, the heaviest meal or dinner at noon, and a light supper about six o'clock. Professional and business men, however, and all those who lead sedentary lives and are not occupied in physical labor or outdoor pursuits, usually eat their heaviest meal or dinner after their work is over, between half-past six and half-past seven in the evening. This class of men usually breakfast at from half-past six to half-past eight in the morning and lunch between one and two in the afternoon. There should be definite times for meals; irregularity in eating frequently injures the digestive system.

Taking Sufficient Time to Eat.—Sufficient time should always be allowed for meals. The hasty mid-day lunch of shop girls and of professional and business men is one of the most frequent causes of indigestion. There should be an intermission of at least one hour in the middle of the day, part of which should be devoted, both before and after eating, to rest or pleasant conversation. If one has but little time for the mid-day meal it is better to take a very light lunch, or even only a plate of soup and a glass of milk with a few crackers, than to gulp down a more substantial dinner. The habit, however, of going without the mid-day meal is most pernicious.

Rest After Meals.—No bodily exercise or severe mental effort should be indulged in directly after meals. If the blood be taken from the stomach to the muscles or brain digestion may be retarded. After a heavy meal rest is especially necessary, and may be taken while one is sipping coffee or smoking. As sleep, however, retards digestion, a person should not retire for two or three hours after a heavy meal.

THE DIFFERENT KINDS OF FOOD AND HOW TO PREPARE THEM.

Foods may be divided into animal foods and vegetable foods. The necessary constituents for a perfect food are provided in the most digestible form by a mixed diet, which contains both vegetable and animal food, the best ratio being one part of raw animal food to three parts of raw vegetable food. A person doing hard muscular work, however, requires a larger amount of vegetable food than one who leads a sedentary life.

ANIMAL FOODS.

The animal foods include milk and its products, eggs, meats and fish.

Milk and Milk Products.—Milk is the cheapest, most easily digested and most perfect food we have. It is universally used as an article of diet by both civilized and uncivilized peoples. As a rule milk is easily digested. Although spoken of as a liquid food, it is converted, as soon as it reaches the stomach, into a finely divided solid through its being curdled by the stomach juices.

One should drink milk slowly, sipping or chewing it, that is to say, mixing it thoroughly with saliva, in which case the curds that are formed are of small size. When a glass of milk is drunk down all at once it becomes converted into large, indigestible, cheese-like masses. If milk disagrees, it may be rendered more digestible by the addi-

tion of lime water in the proportion of two or three teaspoonfuls to the glass, of ærated water such as vichy or seltzer, or of ordinary water. A tolerance for it may be established by giving it at first in small doses of one or two tablespoonfuls every quarter or half hour and then gradually in larger quantities and at longer intervals.

Cream is one of the most digestible of the fatty foods. In the form of ice-cream it is wholesome and agreeable when made simply, but when it contains rich flavoring extracts or much fruit it is less easily digested.

When cream or butter are used in cooking they are best added after the food has been removed from the fire.

Butter, as a rule, is easily digested when raw, but is less so when cooked. The fatty product margarin, prepared from ox fat, is quite as digestible and wholesome as butter and, when mixed with butter, forms what is known as butterin, which is much cheaper than butter and is not at all harmful when properly made.

Cheese is not easily digested except when grated very fine and mixed with other food.

Eggs Raw and Cooked in Various Ways.—Eggs are most digestible when soft boiled and least so when fried. A hard-boiled egg is not digested rapidly unless it is cooked until the yolk becomes mealy, and is thoroughly masticated. Next to boiled eggs in point of digestibility come raw eggs. Eggs must be cooked at a low temperature or they are rendered tough.

Meats and How to Prepare Them.—Meat is not only one of the most important of all the foods, but it forms the bulk of the diet of the average American. Raw meat is readily digested when thoroughly masticated, but not being so palatable as cooked meat, is rarely eaten by civilized people. Cooking renders meat more attractive in color, more agreeable in taste and more digestible.

How to Stew Meat.—Meat is most digestible when properly stewed. The proper way to stew meat is to cut it up into small pieces and place it in cold water, which is then subjected to moderate heat for some time. By this process the juices and flavor will be dissolved out and be present in the fluid in which the meat has been cooked. This fluid is then eaten with the meat, thus making a savory and easily digested dish.

Boiling Meat.—When a large mass of meat is to be cooked in water, or boiled, the flavor and juices must be retained in the meat. This is accomplished by first rapidly coagulating the surface of the meat by exposing it to a high temperature, and then allowing the interior to cook slowly at a much lower temperature; consequently the water should be boiling when the meat is put into it, after which it is allowed to cool, and when it falls to a temperature of about 180° F. the whole mass should be boiled until it is thoroughly cooked.

Roasting or Broiling.—The most savory way of cooking meat is by roasting or broiling. Broiling or grilling over an open fire can be done only when the portion of meat is small in size; larger pieces of meat may be roasted, both in the old way of turning the meat on a spit before the grate, or in the modern fashion of placing it in an oven. The exposure to the very hot air seals the juices which help to cook the inner part. When roasted in the oven the meat should be placed for a short time in a very hot oven until the hot air rapidly coagulates the outside of the meat and thereby prevents the escape of the juices. The meat should then be kept for a considerable time at a lower temperature, usually by placing it in a cooler part of the oven. The largest part of the juices will be retained if the meat be frequently basted by pouring over it the fat that accumulates in the dish, thus sealing it more thoroughly.

Fried Meat is Indigestible.—Fried meat is the least digestible of all, especially when cooked in the improper manner ordinarily practiced. According to this incorrect method some of the fat penetrates the meat, thus rendering it tough and indigestible, while at the same time the hot partly decomposed fat irritates the stomach. The following correct method of frying does not render the meat nearly so indigestible: A deep dish is filled with oil or melted fat, which must be boiling at a temperature of from 350° to 380° F., and the meat is immersed in it. The surface of the meat is at once completely seared and made impermeable. As soon as the meat is cooked, which occurs with great rapidity, it is removed from the oil or melted fat and permitted to drip.

Broths and Beef Juice.—The method of making broths and beef juice is given in Chapter XXV.

FISH AND SHELL-FISH.

Fish is a highly nutritious food, and for the most part is easy of digestion, the fatty kinds, however, such as salmon, whose flesh is of coarse fiber, being less digestible than those which are not so rich in fat.

Oysters are nutritious and wholesome, but the nourishment is presented in a very diluted form. They are more digestible when eaten raw than when cooked. They must always be cooked at a low temperature, so as not to be rendered too tough. *Lobster and crab meat,* being coarse and tough, are consequently rather indigestible.

THE RELATIVE INDIGESTIBILITY OF THE DIFFERENT ANIMAL FOODS.

The following list, compiled from the figures of Penzoldt, Jessen, Richert and Beaumont, gives an idea of the relative digestibility of the different kinds of animal food; those most digestible are mentioned first:

Milk, bouillon, pigs' feet, trout, boiled calf's brains, raw eggs, hard-boiled eggs or omelet, raw beef sausage, boiled brains, sweetbread, raw oysters, boiled carp, boiled pike, boiled sharper, raw beef chopped fine, half-cooked beef, well-cooked beef, raw mutton, cooked veal, boiled codfish, cooked pork, roasted mutton, beefsteak, cooked ham, boiled lean beef, boiled fish, young boiled chickens, roasted partridge, boiled pigeon, roasted bacon, boiled calf's foot, raw ham, boiled salmon, pickled and smoked herring, roasted pigeon, roasted fillet of beef, beef tongue, smoked bacon, roasted hare, roasted partridge, roasted goose, roasted duck.

VEGETABLE FOODS.

The various vegetable foods may be divided into sugars, cereals, roots and tubers, peas and beans, green vegetables, fruits and nuts.

Sugars.—The sugars of commerce are usually forms of cane-sugar, which is chiefly derived from the sugar-cane and the sugar-beet. Molasses and syrup are crude forms of cane-sugar; maple-sugar contains certain other substances in addition to it.

The chief value of sugar lies in the fact that it gives strength to muscles and helps to produce fat.

Sugar should be taken well diluted, as it is best borne by the stomach and intestines when eaten in this way. Milk and the majority of the fruits, for instance, which are easily digested, rarely contain more than 4 per cent. to 6 per cent. of sugar. The reason that candies, jams, preserves and syrups are often indigestible is that the sugar they contain is in too concentrated a form and causes an acid to form in the stomach.

When eaten at all, *candy* is best taken after a meal. Taken between meals, it disturbs the digestion and spoils the appetite.

Cereals.—By cereals are meant the grains that are used

for food. They are rarely eaten until they have been granulated or ground into powder, forming flour. Cereals must be cooked before they can be utilized as food. All starchy foods require long cooking. The coarser meals may be boiled and eaten with sugar and milk or cream.

Flour is usually made up into bread, which is one of the most nutritious forms of food. It is an important supplement to meat and fish, but is not a perfect food in itself. Too hot or too fresh bread is very indigestible, as it is converted, by chewing, into a tough, dough-like mass. Stale bread is much more digestible, as it crumbles into finer particles. Toasting bread thoroughly until it is brown and crisp renders it more digestible, but to toast only the surface and leave the interior soft does not increase its digestibility to any degree.

Roots and Tubers.—The most valuable of the vegetables that grow beneath the ground is the *potato,* new or young potatoes being more nutritious than old ones. Potatoes should be baked or roasted in their skins to retain all their nourishing qualities, a great part of which is lost when they are boiled or stewed. They must be cooked for a long time in order to convert the raw starch into a digestible form. Potatoes are most digestible and mealy when baked; they are least so when stewed, boiled, fried or cooked in chunks to be swallowed in considerable masses. *Carrots, parsnips* and *beets* are not easy to digest. *Turnips* have little nutritive value. *Tapioca* and *sago* are nutritious, though the first takes too long a time to digest.

Peas and Beans.—These contain more protein than any other vegetable. This is the element that makes meat so nourishing. Peas and beans thus form good substitutes for meat when for any reason the latter cannot be taken. They are not quickly digested, however, being least digestible when simply boiled and most digestible when mashed.

The Green Vegetables.—The green vegetables are eaten chiefly because of their agreeable flavor, and because they add variety to the diet. They have little nutritive quality. They are very laxative, however, and counteract any tendency to constipation.

Fruits.—The various fruits are usually eaten as a relish, as their value as a food is comparatively small. The banana is the most nutritious of the raw fruits. Cooking usually renders fruit more digestible, but cooking in water causes it to lose part of its nutritive ingredients.

THE DIFFERENT BEVERAGES.

Drinking Water.—The average person requires from four to eight glasses of water daily. Drinking water may be cooled, but it ordinarily should not be extremely cold, especially when one is overheated. The excessive use of cold drinks is responsible for many of the cases of intestinal disorders that occur in the summer. At meal times water should be taken very sparingly and only when the mouth is empty, as the tendency to wash half-masticated food into the stomach is very injurious. Large quantities of water taken with the food dilute the juices of the stomach too much and thus interfere with the digestion of the food. A small quantity of cold water, however, taken just before a meal has a tendency to increase the appetite. Sore throat is often caused by the drinking of ice water after having swallowed something hot.

Coffee.—Coffee affects different people variously. Some are made very nervous and sleepless by it. As a rule it cannot be taken by dyspeptics, especially if cream and sugar are added to it. It should not be drunk when the mouth is full, and thus wash down food which has not been thoroughly masticated. Coffee should never be given to children.

Tea, when taken in small quantities, may do no harm,

but when drunk to excess may have very injurious effects. It then not only produces wakefulness, nervousness, excitability and even muscular trouble, but it frequently gives rise to digestive disorders as shown by flatulence, a feeling of disturbance in the region of the stomach, and constipation. It often may give rise to irregularity of the heart, pain in the chest and sleeplessness. Children should never be given tea to drink.

Cocoa and **Chocolate** differ from tea and coffee in being nutritious as well as stimulating. They never produce nervous symptoms even when taken to excess. They may be given to children.

CHAPTER VII.

WORK, REST AND RECREATION.

Work in its relation to health. Child-labor. The length of the working day. The necessity for Rest. The noon hour. The ability to relax. The weekly and yearly vacation. The hygiene of sleep. Amount of sleep required. The bed and the bed clothes. The way to lie. Fresh air in the bedroom. Rules for sleeping and preventing insomnia The necessity for Recreation. Mental recreation. Physical recreation: Walking, running, climbing, bicycling, horseback riding, rowing, canoeing, swimming, lawn tennis, tether tennis, golf, basket ball, bowling, fencing, punching the bag, dancing.

"Alternate rest and labor long endure."
—*Ovid.*

WORK IN ITS RELATION TO HEALTH.

THE health may be affected by the character of one's occupation. Having to work in overcrowded, badly ventilated rooms renders a person liable to disease. Various deformities may be produced when the work demands constrained attitudes of the body or unequal exertion of both sides. Frequently a sedentary occupation, through the consequent lack of exercise and fresh air, bears a causal relation to ill health. Nevertheless, the detrimental influence of any occupation upon health and length of life may be considerably reduced by attention to the ventilation of the working-room, by eating in a proper manner well-prepared, digestible food, and by participation in active outdoor exercise.

Child-Labor.—One of the chief factors that tend to impair the vitality of the race is the tender age at which girls are often sent to work and the long hours which they must spend at monotonous labor. This produces a physical deterioration in the mothers which shows its influence in the offspring. It is

wrong for children under fourteen years of age to work in mines, factories or workshops. In childhood the various organs are constantly undergoing development. For this fresh air, healthy outdoor exercise and freedom from care are necessary. Stunting the growth of the child and depriving it of the benefits of education are two of the surest means of causing the men and the women to be undeveloped physically, mentally and morally.

The Length of the Working Day.—The length of the working day depends to a great extent upon the occupation, but as a rule it should never exceed ten hours for men and eight hours for women and youths; the greater the physical exertion or the mental strain required in an occupation, or the greater the danger to which the worker is subject, the shorter must be the working day. Working overtime ought never to be allowed.

THE NECESSITY FOR REST.

The Ability to Relax.—A woman should be able to relax at intervals. When the eyes are steadily engaged in near work they should be rested every half hour or every hour during the day by being made to look off into the distance for a moment or two. It is well to relax the mind in the same way by now and then ceasing thoughts of one's work and for a moment recalling something pleasant that has been seen, read or noticed. One tending to become nervous is advised by Dr. Walker to stop and take a few deep breaths as a way of relaxing the tension. An English physician who has had wide experience in treating nervous patients suggests as a means of meeting a shock and breaking its force that a person stop for a minute and fix the attention on some trivial object, such as a hen outside in the yard. For instance, before opening a telegram one is advised to go to a window and look intently at some object outside.

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DRESSING THE HAIR.

This is too often considered a matter of little importance, yet the laws of health and beauty require that early in life the girl be taught to care for her beautiful tresses.

The Noon Hour.—In the middle of the day a rest from work of at least one hour should be taken so that time will be allowed for half an hour's freedom from work after luncheon. This time should be spent by those who have been standing all morning in reclining, and by those who have been sitting in walking in the open air. A person employed in manual labor might spend this time in reading, but one who has been using the brains should spend it in active exercise.

The Weekly and the Yearly Vacation.—At the end of each week a person should rest for at least twenty-four hours. Once a year, too, a complete rest of not less than two weeks should be taken; preferably in the summer time. The vacation restores the weakened muscles and digestive organs to their normal healthy condition after the close strain of the winter's work.

THE HYGIENE OF SLEEP.

The value of sleep depends much more upon its soundness than upon its duration. When disturbed by dreams it is of much less value than when it is dreamless.

The Amount of Sleep Required.—The average *adult* requires eight hours of continuous sleep each day. *Children* require much more sleep, as stated in Chapter XXVIII. Aged persons do not need quite so much. Persons who have to rise early during the week would do well to lie in bed longer on the day of rest.

The Bed and the Bed Clothes.—One should sleep on a fairly hard but comfortable mattress with a springy yet firm surface. Feather beds and feather pillows should be disregarded altogether. One good hair pillow is usually sufficient. The covers should be light but warm, two light blankets being warmer than one that is heavy, on account of the layer of air between them. The bed clothing should be thoroughly dried and aired every day, being preferably exposed to the sun.

The Way to Lie.—It is a bad habit to prop the head with

many pillows, which tends to cause a strain on the muscles of the neck and produce round shoulders or other deformities, besides often being the cause of nightmare and restlessness. Not more than one pillow or bolster should be used. Some girls make a practice of sleeping without any pillow at all, on the theory that lying perfectly flat on the back is not only conducive to restful sleep, but keeps the shoulders straight. It is usually considered best to lie on the right side. One should lie stretched out rather than curled up.

Fresh Air in the Bedroom.—It is necessary to have plenty of fresh air in the room during both winter and summer. Cold air will not render one liable to taking cold, provided the body is well protected with the covers.

Rules for Sleeping and Preventing Insomnia.—No garment should be worn at night that has been worn in the daytime. During the night all the day clothing should be well aired. When a person is tired and sleepy she should go to bed and not lie around dozing all the evening. One should not go to bed hungry, but instead may take some light, simple food before retiring.

The taking of a glass of warm milk or a cup of hot bouillon before going to bed may draw the blood from the brain to the stomach of those who persist in planning and thinking after their heads touch the pillow, thus serving to induce sleep. When the mind is excited or full of business or other worries, it may often be calmed before bed-time and turned into pleasant channels by half an hour's reading of a light novel or short story. A hot bath taken before retiring, or a hot pack, or the application of hot compresses to the spine after getting in bed, will often aid in producing sleep in a person subject to insomnia.

THE NECESSITY FOR RECREATION.

For the preservation of the health habitual recreation is absolutely essential. There are two kinds of recreation—men-

tal and physical. The kind a person needs depends altogether upon the vocation; a change is what is required. A person whose work is largely physical requires physical rest and mental exercise at the end of the day's work. One who continually uses the mind needs to relax the mind and exercise the body.

MENTAL RECREATION.

An overworked mind finds rest in pleasant conversation, in cheerful games which are not too intricate, in seeing plays and hearing operas, in reading pleasant books and in the cultivation of fads. A hobby, such as the collection of stamps, rare prints, old coins, old china, old furniture, and the like, furnishes an agreeable diversion by taking one's mind off the daily worries. On the other hand, recreation involving some mental labor may be of advantage to a person whose work is physical and whose mind is little exercised. For such a one chess-playing is an interesting diversion and even Sunday-school teaching may prove beneficial. These forms of recreation, however, are injurious to one whose mind is constantly on a strain, such as a public school teacher.

PHYSICAL RECREATION.

Every one who is not employed in some laborious occupation requires physical recreation. Especially is this true of those who lead sedentary lives. For an exercise to be of benefit it must give pleasure and be accompanied by freedom from cares. A walk taken simply for the pleasure of it is much more beneficial as an exercise than a walk to or from one's place of business, the first being a diversion, the second often a strain.

There are various forms of physical exercise, some of which can be participated in by all while others require special apparatus and grounds. As stated in Chapter IV, the various forms of physical exercise, including games and sports, are especially useful in developing the figure.

Walking.—The most natural form of exercise and the one most generally utilized is walking. This is a very valuable exercise when sufficient time is taken for the natural swing of the leg to bring the foot forward at the completion of each step. The girl should hold her chest high, moving her legs freely from the hips with a long swinging step and letting her arms hang easily at her sides. Rapid walking utilizes every muscle of the body, and by agitating the body at every step stimulates the functions of the abdominal organs.

Running is beneficial, but should not be pursued to the point of exhaustion or of respiratory embarrassment. The combination of alternate slow running and walking is an even better exercise than either alone.

Climbing or walking up a grade is excellent if done with frequent resting. Before attempting mountain climbing it is well to practice first on small hills. A light loose dress should be worn, consisting of a flannel waist and a short skirt. The shoes should be easy fitting with thick soles and broad low heels. They may have spikes or nails in the heels if the climbing is to be long and hard. When the health is delicate, or the heart or lungs weak, climbing should never be undertaken without the advice of a physician.

Bicycling.—If pursued at a moderate gait and for moderate distances, bicycling is in many respects an ideal exercise, but it is harmful when continued to the point of exhaustion.

Horseback Riding not only develops the legs and thighs, but stimulates the abdominal organs through the agitation caused by the up and down motion of the horse. When the girl rides in a side saddle she should use one with reversible pommels, sitting one time on the right side and another time on the left. Riding astride with a divided skirt develops the body more symmetrically and in the opinion of the author is not objectionable.

Rowing.—Nearly all the muscles of the body are brought into play by rowing, especially those of the forearm, shoulders and back. The abdominal muscles are used in the forward swing, while the back muscles are exerted in the backward pull. The bracing of the feet develops the muscles of the legs and thighs. The swing should come from the hips. The carriage is much improved by this form of exercise if during it the body is held in the proper position. The most important point to bear in mind is to keep the back flat and not to bend the head. It is well to wear flannels while rowing.

Canoeing does not exercise so many muscles as does rowing, but develops chiefly the muscles of the upper back, arms and wrists. The side movement or twisting of the trunk which comes in with a double-bladed paddle is beneficial in stimulating the internal organs. A girl should neither row nor paddle unless she has learned how to swim.

Swimming brings nearly all the muscles into play. It straightens round shoulders, develops the muscles of both the arms and legs, throws the chest forward, and by keeping the back on the stretch in the effort to keep the head above water, tends to develop a graceful poise.

Lawn tennis has always been popular. It is one of the few sports in which most girls can indulge. A vigorous game, necessitating running to all parts of the court, it not only develops all the muscles of the body, but makes the shoulder joints and the waist supple, strengthens the wrist and brings grace and agility to the motion of the arms and legs.

Tether tennis does not require a court or expensive apparatus; it can be played in the smallest yard. A girl should wear flannels or a sweater when playing this game, as she is very apt to become overheated and may become chilled after perspiring. Probably more exercise can be derived in a shorter length of time from this game than from any other.

Golf enjoys great popularity among the wealthier classes,

its greatest benefit coming from the walking and the length of time spent out in the open air.

Basket Ball is an ideal exercise, developing all the muscles equally and increasing the power of the heart and lungs. In match games, however, the physical benefits do not compensate for the nervous strain and exhaustion.

Bowling is a vigorous game and one very popular during the winter months. The twisting of the trunk that it brings is beneficial to the abdominal organs. The disadvantages of this game, however, are that the ventilation in bowling alleys is usually poor, and the exercise is usually of a one-sided character.

Fencing.—For those who have the time to devote to it and the money to provide the equipment, there is hardly a better all-around exercise than fencing. Girls should learn to fence with both hands, so that their arms and legs will be developed symmetrically. Practice at fencing will bring a lighter step, grace of movement and a more agile form.

Punching the Bag.—An excellent form of indoor exercise is the use of the punching bag. If one of the men in the house owns such an apparatus the girls should certainly take advantage of it. By its use every muscle of the body is brought into play. The bag should hang about on a level with the shoulders. A light flannel gymnasium suit should be worn during this exercise. A pair of light gloves will also be needed.

Dancing is sometimes the only form of exercise a girl will have during the winter. It is a useful form of exercise, and probably more than any other tends to develop grace of movement.

PART II.

A WOMAN'S LIFE.

THE TRYST BY THE SHADY WALL.

Young manhood enamored by the loveliness of beautiful womanhood feels that "But to see her was to love her."

CHAPTER VIII.

ANATOMY AND PHYSIOLOGY.

Sex throughout nature: In plants; in the lower animals; in man. Woman's physical characteristics. The female sexual organs: In plants; in the lower animals; in woman. Woman's reproductive organs: The womb, the vagina, the Fallopian tubes, the ovaries. The pelvis.

"Shalt show us how divine a thing
A woman may be made."
—*Wordsworth.*

IN the first part of this book, on "Health and Beauty," general hygienic rules have been given which apply to every one, irrespective of sex. The present section deals entirely with the phenomena which are peculiar to woman, giving those particular rules which are to guide her through a healthy and, consequently, happy adolescence, maidenhood, wifehood and motherhood. Before any suggestions are made as to the precautions to be observed during each period, the physiology of that period is described, so that the suggestions may be followed intelligently. In discussing physiology, a broad view of life has been taken, showing woman's true position in nature and her relation to the others of God's creatures.

SEX THROUGHOUT NATURE.

All living matter possesses the power of reproduction. This is, in fact, one of the characteristics which distinguish it from non-living matter. In all the higher forms of life, both animal and vegetable, a special portion of each or-

ganism is set apart for this distinct purpose. The elements necessary to the formation of a new plant or animal are usually not all found in one individual but are divided between two, which are known as male and female. These must unite to form the new organism. The offspring develops from one element, the female, as soon as the other element is added to it. In flowers this distinction of sex is recognized, the stamens representing the male element, the pistil the female. Willow trees show this sexual differentiation, some producing only those catkins or pussy-willows which consist entirely of pistils and others blossoming only into stamen-bearing catkins. In the familiar corn or maize the "tassel" is the male flower, the "silk" is the female.

FEMALE ORGANS IN PLANTS AND THE LOWER ANIMALS.

Each sex has its generative organs well developed. In the centre of every *flower* stands the pistil, the upper portion forming the style and the stigma, the deep-seated portion being the ovary, which contains the ovule. When the flower is fertilized by the male element—the pollen—the ovary begins to develop and to form seeds, which, when planted, put forth leaves and stalks and finally bear flowers, just as did their parents. The pod with its peas or beans and the apple or pear with its seeds represent the ovary of the plant.

In the animal kingdom sexual organs are possessed by even the lowest members. The ovary of the *fish*, for instance, is familiar as the roe. It contains countless ova which, when deposited, are known as spawn. These ova, upon being fertilized, become the eggs, from which later the baby fish are hatched out.

In *birds* the ovum is fertilized while in the ovary, and is then laid in the form of an egg, to be hatched outside the mother's body. Every woman who has dressed a hen has

seen its ovary with the unfertilized ova and the fertilized eggs.

Sexual Organs of Flowers.

A. Flower, showing the stamens around the ovary.
B. Ovary before fertilization, showing a few stamens still attached.
C. Ovary after fertilization. It is developing and forming seeds.
D. The fully developed ovary (the pod), containing seeds. It has been cut across to show the seeds.
E. A seed.

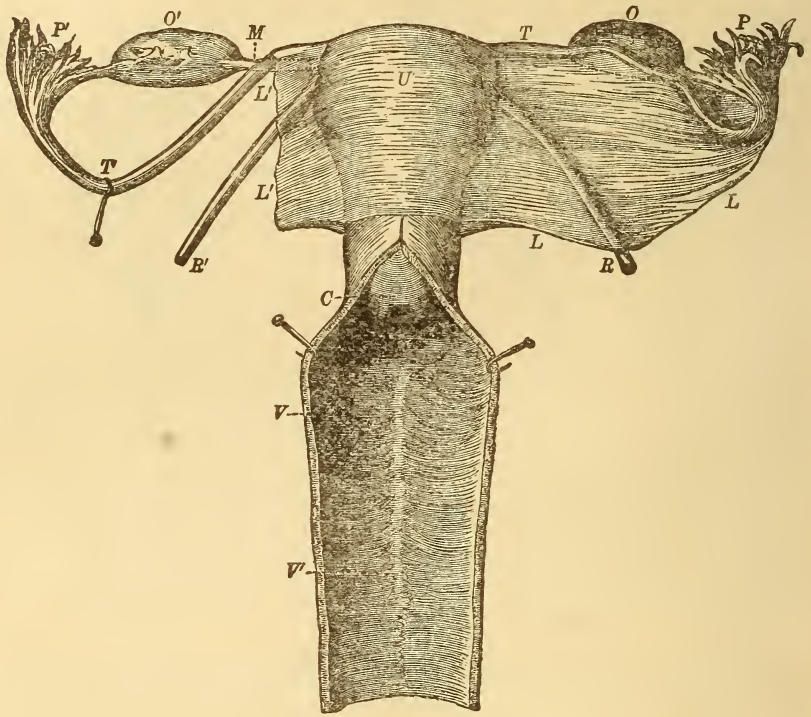
In all the *lower animals* the embryo, as the unborn offspring is called, develops and obtains its food outside of the parent's body. The chick, for example, lies within an egg, nourished by the white and the yolk, and protected by the shell.

In the *higher animals,* such as the mammals, the offspring must obtain its nourishment from its mother while it is developing as well as after it is born. It also must be protected by her body. The organ in which the embryo lies

while being formed into a living child is called the uterus or womb.

WOMAN'S REPRODUCTIVE ORGANS.

The *Uterus* (also called womb, matrix, bed, nest and mother) is a hollow organ, shaped like an inverted pear. It is about two inches and a half long, one inch and a



FRONT VIEW OF WOMAN'S REPRODUCTIVE ORGANS.

U. The uterus or womb. C. The cervix or neck of the womb. V and V'. The vagina. (This, normally, is a tube. In the picture a longitudinal cut has been made along the top or roof, and the sides are pulled out.) O and O'. The ovaries. T and T'. The oviducts or Fallopian tubes. P and P'. The funnel-shaped distal ends of the Fallopian tubes. (The right-hand side of the picture shows the ligament that holds the womb in place. The left of the picture shows the ligament cut away and the tube pulled out of position.)

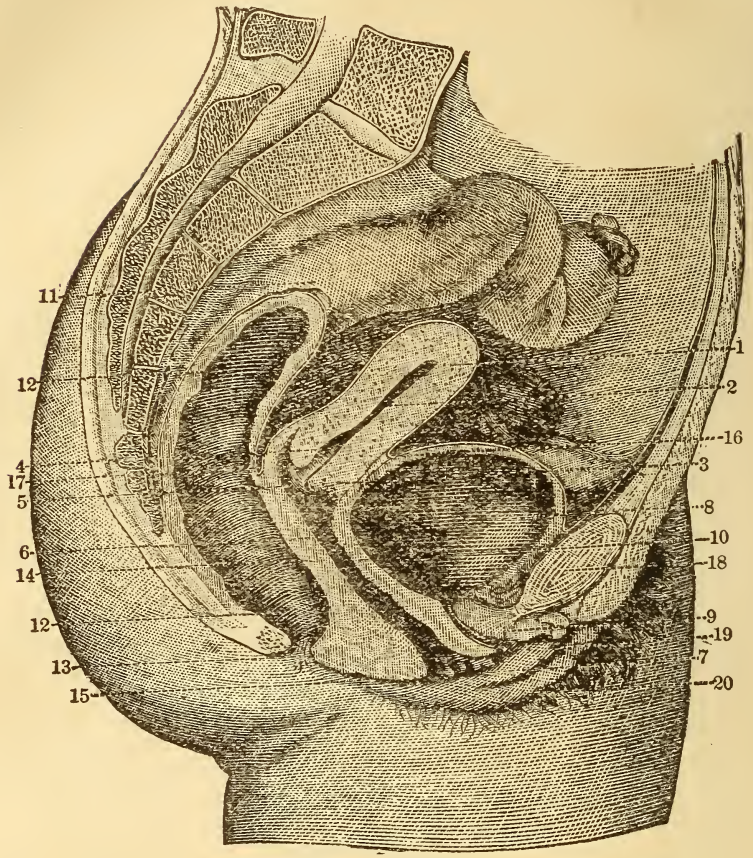
quarter wide and three-quarters of an inch thick. The walls are composed of thick muscles, leaving a triangular cavity only big enough to hold about half a teaspoonful of liquid. It ends below in a *neck*, called the *cervix*, traversed by a narrow canal, called the *cervical canal*, an inch and a half long. The upper end of this canal, where it opens into the cavity of the uterus, is called the *internal os* or *mouth;* the lower opening is the *external os* or *mouth.* The body and the neck of the womb are both lined with a membrane containing *glands,* which secrete mucus. When too much of this mucus is secreted the condition called leucorrhea, or "the whites," results.

The neck of the womb projects into a tube, called the *vagina,* about four inches long. The walls of this tube normally lie in contact but are capable of being stretched to a considerable extent. The vagina also is lined with a mucous membrane containing glands that secrete mucus which acts as a lubricant. It opens externally, but in a maiden is partially covered by a thin membrane called the hymen.

The uterus is supported by means of *ligaments* fastened to each side and attached to the bones. It is slung between the two ligaments just as a person is supported in a hammock.

Along the upper border of the ligaments lie the oviducts or *Fallopian tubes,* which open into the womb at the top on each side. They are narrow tubes, about four inches long, running outward from the corners of the womb and opening like funnels at their other extremities, where they are in contact with the ovaries, connecting them with the womb. They also are lined with mucous membrane.

The *ovary* is like an almond in shape and size and hangs in the fold of the ligament just below the Fallopian tube, at its distal end. It is a gland secreting ova or eggs. It prob-

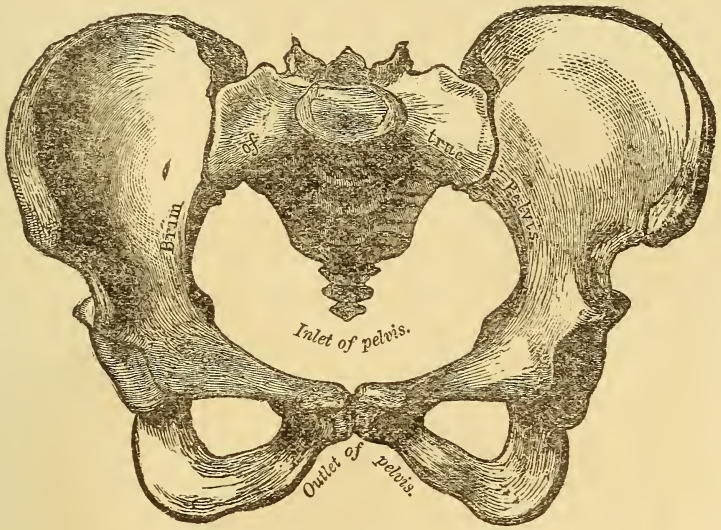


THE LOWER ABDOMEN IN A WOMAN.

A side-view, with the organs cut in half, showing the shape and position of the womb and its relations to the other organs.

1. Uterus (or womb).
2. Cavity of womb.
3. Neck of womb (or cervix).
4. Cervical canal.
5. External os (or mouth) of the cervix.
6. Vagina.
7, 19 and 20. Vulva (or external parts).
8. The bladder.
11. The rectum, outer wall.
12. The same, cut open.
13. The anus.

ably also secretes a substance necessary to woman's health, about which not much is known.



THE PELVIS.

The uterus and its appendages, as the tubes and ovaries are called, lie in a bony basin, called the *pelvis*.

WOMAN'S OTHER PHYSICAL CHARACTERISTICS.

The average woman weighs about twenty pounds less than the average man and is five inches less in height. Her shoulders are narrower and more rounded and set further back; the collar bone is longer and less curved, giving the chest greater prominence; the pelvic bones are larger and spread out more, making the hips much broader in outline. All the other bones, however, are smaller and more delicately fashioned. The presence of fat under the skin gives a more rounded and smooth appearance generally.

CHAPTER IX.

THE PERIOD OF PUBERTY: PASSING FROM GIRLHOOD TO WOMANHOOD.

The changes that occur at adolescence. Variations in the age of puberty due to climate, race, mode of life, and heredity. Delay in the appearance of the chief sign of puberty. The Mental Changes at Puberty. The Religious Changes. The Mother's Duty. The Hygiene of Puberty.

"Standing with reluctant feet
Where the brook and river meet,
Womanhood and childhood fleet!"

—*Longfellow.*

IN the child the sexual organs are but partially developed and remain inactive. At about the end of the fourteenth year, however, they begin to functionate, and the girl becomes capable of reproduction. The period at which this occurs is called puberty or adolescence.

In addition to the changes in the generative organs, other alterations take place in girls at this period. The figure begins to assume the aspect of womanhood, the breasts become developed, the pelvis and abdomen enlarge, the voice undergoes a change, hair appears in the arm-pits and about the pubic region, and the menstrual flow, or monthly sickness, is established.

VARIATIONS IN THE AGE OF PUBERTY.

Although puberty usually occurs about the thirteenth or fourteenth year, it may appear earlier or later, its onset being influenced by climate, race, mode of life, and heredity. In tropical *climates* it may occur at nine or ten years of age; in Egypt and Sierra Leone it occurs normally at ten years. In these climates it is said not to be an uncommon thing for a girl to be a mother at twelve.

THE GOLDEN WEDDING DAY.

"Let prudence with good nature strive, to keep the flame of love alive,
Then, come old age when'er it will, your friendship shall continue still."

Puberty occurs late in the cooler climates and among the peoples normally inhabiting them. In Lapland, for instance, menstruation does not appear until the eighteenth year. The Teutonic and Anglo-Saxon races while in their European homes arrive at adolescence oftenest in the fifteenth year. In the United States and Canada puberty usually occurs about the fourteenth or fifteenth year.

In Hungary the three *races,* Slavonic, Magyar and Jewish, living side by side in the same climate, reach adolescence, respectively, when sixteen, fifteen and thirteen years of age. Hindu girls of Calcutta and negresses of Jamaica, also living in the same climate, begin menstruating at the eleventh and fifteenth year, respectively. Some writers state that blonds mature earlier than brunettes. Menstruation in Jews begins a year or two in advance of other races in this country. In negroes and Creoles the monthly sickness appears earlier than in white people.

The influences of *city life,* with its excitement of parties, theatres and the like, association with the other sex, and sexual temptations, tend to hasten the oncoming of puberty.

It is said that *diet* has an influence, that stimulating foods, such as pepper, vinegar, mustard, spices and condiments generally, tea and coffee, and an excess of animal food have a clearly appreciable influence in prematurely bringing about this condition.

Heredity may affect the time of puberty, it being a matter of common observation that in some families menstruation may begin early through several generations.

DELAY IN THE APPEARANCE OF THE CHIEF SIGN OF PUBERTY.

Although other signs of puberty may occur at the usual time, the menstrual flow may be late in making its appearance.

This is usually due to a condition of anemia or impoverished blood, caused by want of sufficient sunlight, fresh air, exercise, good food and sleep, and by a too close application to study.

The mother is often alarmed when the menstruation is delayed, and may try various home remedies to bring it on. The non-appearance of this phenomenon need not be a matter of concern, provided the general health is otherwise good. No medicine should be given for the purpose of bringing on the monthly sickness. Let the girl have plenty of good, nourishing food, sunlight, fresh air and out-door exercise. In time everything will be all right.

If, however, the girl seems in poor health, or if she suffers much from pain, headache, nervousness and general discomfort, she should be taken to the family physician. Under treatment directed to her general condition, she will probably become a healthy, normal girl. The services of a gynecologist or specialist in women's diseases are almost never required. The fault seldom lies with the generative organs; it is unwise, moreover, to call attention to them. A modest young girl should never be subjected to an examination, even by a female physician, unless there is ground for suspecting something serious to be the matter. The mere fact of menstruation being delayed is not sufficient cause.

THE MENTAL AND RELIGIOUS CHANGES AT PUBERTY.

As womanhood unfolds, other changes occur besides those of the body. The girl is in a state of restlessness and of nerve irritability; her mind is confused with feelings of undefined longings and desires, and of vague dissatisfaction with all about her. She often tends to become morbid, fanciful, self-conscious and supersensitive, and her feelings are easily hurt.

About this same time a change in the girl's religious

nature may be noticed. Mothers and Sunday-school teachers should fully understand this change, that they may guide the girl aright through this epoch in her spiritual being.

The Phenomena of Religious Changes.—It is at this period, between the innocence of childhood and the fixed ideas of maturity, while the girl is yet impressionable and has already capacity for spiritual insight, that those apparently sudden changes of character in the spiritual life, known as conversion, usually occur.

Sometimes the changes are gradual rather than sudden. The ideas of God and duty and religious observance, which during the earlier years may have been external to the child, having been embodied in precept or custom or in her own playful imagination, now, during the period of adolescence, take root in her life and have a vital significance; they become her own.

The majority of girls at this time go through a period of storm and stress. They have a sense of incompleteness and imperfection; often they become brooding, depressed and morbidly introspective. Many doubts arise to distress them; there is a constant friction against their surroundings. This is the most important stage of these changes; on its outcome the future religious attitude of the girl depends. Ill health and want of proper guidance at such a time are responsible for many cases of religious indifference.

THE MOTHER'S DUTY.

The duty of the mother is plain. Dr. Capp says:

"The daughter is fortunate whose mother makes their intercourse a sympathetic companionship, especially at the age of puberty, when those changes in body and mind take place which develop the girl into a woman.

"Of the changes in her body no one can speak to her better than a mother; but it will call for infinite tact and

the nicest judgment to so discuss them that maiden modesty and the charm of feminine instinct be not disturbed, and that proper hygienic considerations shall be inculcated. Certainly, the child should not be left to derive knowledge upon such subjects from servants or chance friends, who are not likely to be properly informed. It is not a time calling for alarm. The whole process is physiological, a growth and development according to the laws of nature; no new thing is happening."

Sound practical advice in this connection is also given by Dr. Jane Walker:

"Mothers and guardians of girls should obtain their entire confidence with regard to their monthly functions; it will save much misery, both to body and mind.

"Here let me say that it is the duty of a mother to be open with her girl in this connection. When, from the changes that are occurring in the girl's body, her mother suspects that menstruation is about to take place, it is her duty to tell her what lies before her. What she will say will vary with the daughter's age, and also with the extent of the mother's own knowledge. If the latter has some acquaintance with physiology and natural science, she will be in a better position with regard to this question than one who has had no scientific teaching at all. Probably the simplest plan is to draw the girl's attention to the various signs of approaching womanhood, and then to tell her that this is one of them. In whatever way the communication is made, it must not be omitted, for no one can realize the shock endured by a perfectly ignorant girl on experiencing her first monthly period. Many of the ills suffered in later life are traceable to neglect and ignorance at this time. Moreover, if the mother does not herself tell the girl, someone else will probably do so, and the communication may be made with coarseness, which will have

an injurious effect on the girl's character. A mother should at this period of her life be a girl's best friend, with whom she feels there can be no reserve."

THE HYGIENE OF PUBERTY.

During this trying period of her life, the child should be kept free from all excitement. She should spend a great deal of her time out of doors, playing various games, without becoming fatigued with too much exercise. Light occupations will give her something to occupy her mind and take her thoughts off herself. She should have plenty of sleep, nine hours at least, but she must not be permitted to lie in bed after waking in the morning.

During the menstrual period the daughter should receive special care and attention. She needs quiet and rest and must not apply herself too closely to her studies. The hygienic management of menstruation itself is considered in detail in the following chapter.

The Mother or Physician Should be Consulted Without Hesitation.—Dr. Button emphasizes that, as the girl approaches puberty and is instructed regarding what is about to occur, it must be impressed upon her that her mother and her physician are her confidential advisers, either of whom she can freely consult regarding any trouble with the menstrual function, without being considered at all immodest; that the subject is a sacred one, which she may discuss freely with her mother or physician for the purpose of information and advice, and maintain her dignity and modesty; but that to discuss it lightly with companions, in jest, is improper, immodest and vulgar.

CHAPTER X.

THE MONTHLY PHENOMENA.

Ovulation. Menstruation. Time of onset and cessation. Character of the menstrual discharge. Duration of the flow. Quantity of the discharge. Other symptoms exhibited at this period. The menstrual interval. Pain during menstruation. Connection between menstruation and ovulation. Vicarious menstruation. The hygiene of the menstrual period.

"The common ingredients of health and long life are:
Great temp'rance, open air,
Easy labor, little care."

—*Sir P. Sidney.*

EVERY month there occur in a woman two phenomena, menstruation and ovulation. Neither is dependent upon the other although they usually, but not always, occur at the same time. Ovulation, however, may be present several years before menstruation begins.

THE PHENOMENON OF OVULATION.

The ovary has been described as a gland secreting eggs. These eggs or ova develop one at a time. At regular intervals the most mature egg or ovum swells to the size of a pea or cherry and bursts through the wall of the ovary. This occurrence is known as ovulation, and takes place once a month during the period from puberty to the menopause. This period lasts on the average from the fourteenth to the forty-fifth year, although it has begun as early as the ninth and has ended as late as the fifty-ninth year. Ovu-

lation may begin before menstruation, as has been said, and may cease before the menopause.

When the ovum is discharged from the ovary, it enters the funnel-shaped outer end of the Fallopian tube and travels through this tube into the uterus.

Connection Between Menstruation and Ovulation.—Although there is no direct connection between the two, menstruation and ovulation depend upon a common cause, being due to the same periodic nervous impulse. As a rule, the ovum is discharged at the height of the menstrual congestion, but it may leave the ovary at any time during the menstrual interval.

THE OCCURRENCE OF MENSTRUATION.

About the same time the ovum is discharged, a change takes place in the lining membrane of the womb. This becomes swollen and congested, due to an increase in the number and size of the blood-vessels.

When Conception Occurs.—If the ovum, in its journey through the tube, should be impregnated by a spermatozoon or male cell which has worked its way up from the vagina, it becomes attached to the wall of the uterus. In this case the swollen and congested mucous membrane continues to develop and helps to form the coverings for the ovum or egg with its contained embryo or unborn child.

When Conception Does Not Occur.—If, on the other hand, the ovum is not impregnated, the new and dilated blood-vessels rupture, filling the uterus with blood. The uterus thereupon contracts and expels the blood. This monthly discharge of blood from the womb is known as menstruation.

Time of Onset and Cessation of Menstruation.—In the preceding chapter menstruation was shown to be the principal event of puberty. It begins in this country at the

fourteenth year but the time of its first appearance is influenced by the factors already mentioned.

The menstrual flow usually ceases about the forty-fifth year, but it may stop before a woman is forty. On the other hand, it often continues beyond the forty-fifth year. The period at which it ceases is known as the menopause or "change of life." A chapter is devoted to the consideration of this important epoch.

Character of the Menstrual Discharge.—The menstrual discharge consists chiefly of blood, but contains mucous secretion from the glands of the uterus and vagina. It is dark in color. As a rule it should not clot. A peculiar odor is imparted to it by the secretions of the glands of the vagina.

Duration of the Flow.—The normal duration of the flow is from two days to a week. It rarely lasts less than three days. After the bloody flow has ceased it is commonly followed for a day or two by a mucous discharge or leucorrhea.

Quantity of the Discharge.—The amount of fluid discharged is given by Penrose as from two to nine ounces, and by Hirst as four to six ounces. It is seldom measured accurately. Instead, it usually is estimated by the number of napkins worn in twenty-four hours and is considered excessive if the napkins must be changed more than three times a day. The flow is greatest during the first two or three days and then grows less until it ceases.

Other Symptoms Exhibited at this Period.—A woman usually experiences at this time a feeling of weight and heaviness in the generative organs, caused by their congestion and swelling. There is also a state of more or less nervous excitability, depending, as a rule, upon the woman's temperament. A nervous person is usually made worse at such a time. The breasts usually swell and may even

A TIRED MOTHER AND HER BABE.

After her hard day's work the weary mother is more ready for sleep than her baby whom she has just put to bed.

secrete milk. The neck becomes enlarged through the swelling of a gland that lies just above the breast-bone. Sometimes the tonsils also become swollen; a singer may thus lose her voice at such a time. The heart usually beats quicker and more forcibly. The skin becomes redder from an increase of blood and may be flushed at times. Dark rings appear under the eyes and brown patches, known as liver spots, may show upon the skin.

The Menstrual Interval.—Twenty-eight days usually elapse from the beginning of one menstrual period to the beginning of another. The menstrual interval, however, may vary within the limits of health. The flow sometimes occurs with regularity every two, three or five weeks. In the first instance the flow may be normal in amount every four weeks but scant at the alternate periods.

Irregularities often occur when the general health is poor and when certain diseased conditions are present. These are discussed in a subsequent chapter.

Pain During Menstruation.—A normal menstruation is painless. When pain is suffered before, during or after the menstrual period, it is an indication that there is something wrong with the general health, or with the local condition. The subject of painful menstruation and the methods for its relief are treated in the afore-mentioned chapter.

VICARIOUS MENSTRUATION.

The name vicarious menstruation is given to the discharge of blood at the menstrual period from some part of the body other than the uterus. This bleeding may come from the nose, the throat, the lungs, the stomach, the bladder, or the rectum and anus. It may occur in addition to the normal flow. It is a rare condition, though as a rule of no serious import, being usually found in debilitated,

nervous women. In some cases, however, it is indicative of defective development.

THE HYGIENE OF THE MENSTRUAL PERIOD.

It is important that a woman should, so far as possible, have rest and quiet while menstruating. Especially is this true during the earlier years, when the mental and physical disturbances of puberty occur. Rest in bed is desirable, though not essential except in the very nervous. In every case all mental and physical work should be reduced as much as possible. A woman must be careful to avoid heavy lifting, over-fatigue in walking, too long standing, riding a horse or wheel, dancing and participating in violent sports during this period. Not only must she not indulge in sea bathing, but she cannot use cold water in any way—as tub, shower or sponge bath.

All the hygienic rules given in the early chapters of this book are to be closely followed.

In regard to the mental and nervous symptoms that may occur at such a time, Dr. Walker gives the following excellent advice:

"Watch yourself carefully during these periods, and if you observe that you are unusually irritable, keep a tighter grasp on your self-control and try to appreciate the fact that you are not quite your best self.

"If the world looks dark and people appear unfriendly, remember that you are being influenced by your physical condition, and do not pass judgment until you are feeling more nearly normal. You will then generally find that the world is just as bright and your friends are just as loyal as you had believed them before."

CHAPTER XI.

PURITY.

The danger of silence. A mother's responsibility. What constitutes purity. A mother's duty to her daughter. To preserve true modesty and innocence. The dangers of secret vice. Hygiene as a prevention and treatment.

"Love Virtue, she alone is free;
She can teach thee how to climb
Higher than the sphery clime;
Or if Virtue feeble were,
Heaven itself would stoop to her."
—*Milton.*

THE DANGER OF SILENCE.

PARENTS seldom realize that silence in regard to the matter of purity is fraught with the greatest danger to their children. They naturally feel some hesitancy and diffidence about broaching so delicate a subject. In their cowardice they frequently delude themselves with the thought that possibly their child will escape learning of the evils existing in the world.

But as a mother, writing in a leading popular magazine, some years ago said:

A Mother's Responsibility.—"A knowledge of the utter corruption of human nature must in some degree reach the most sheltered woman of the present day, and it lies with every mother to accept the responsibility of seeing that it comes in the right way. If the alternative were between the knowing and not knowing of certain things on the part

of young girls, a mother might feel a natural pang at the thought of disturbing the vestal purity of the girlish imagination; but it is usually a very different alternative from this. The choice lies too often between knowing the right things and knowing the wrong—between looking at the most solemn realities of life in an earnest, reverent spirit, or making them the subject of mysterious and giggling confidences, and *double entente,* though mothers may fondly dream otherwise. It is quite time that we women and mothers should face this question squarely, and that we should come to a true idea of what constitutes purity.

What Constitutes Purity.—"Purity means spotlessness, not mere ignorance. It is a mental poise—that attitude toward evil which can only be taken and maintained where a knowledge of evil exists. It is not what one knows that constitutes impurity, but what one loves. * * * *

A Mother's Duty to Her Daughters.—"It is an immense advantage to a woman to have made her children her companions. The habit of talking with them and explaining difficulties of various kinds will open the way for such teaching as this, and if, in addition, she has informed herself in scientific matters, so that she can lead the way from physiological botany to human physiology, she will find the familiarity with scientific terms and the habit of dealing with the subject impersonally a great aid.

"When a natural and healthful curiosity is met by a frank and simple statement of facts, the greatest danger is avoided. All temptation to discussion of these matters among girls is removed. Knowledge, instead of weakening and corrupting the character, really strengthens and purifies, if it be the right kind of knowledge, rightly given. There must be a pure and right way of looking into whatever God has ordained. Let us seek until we find it, and then gently guide our daughters till they find it too."

These same ideas are expressed by Dr. Capp, in his little book on "The Daughter," in which he says:

TO PRESERVE TRUE MODESTY AND INNOCENCE.

"To preserve the charm of true modesty and innocence, it is safer for a girl that she be instructed concerning the requirements of personal purity, rather than be allowed to grope amid chance experiences and to run the risks of unfriendly influences. Experience is the only teacher for all, but in many things the lessons may be taken at second hand, and the wise do well to profit by the experiences of others. Although it may be a difficult duty to perform, no careful mother will neglect to properly instruct her daughter in matters relating to the sexual nature. Thoughts upon this subject cannot be avoided, but will arise as mind and body develop, and they should be wisely and intelligently directed in confidential talks skillfully planned and discreetly managed by the mother.

"Sexual matters are not motives and aims in life, but they imperiously mingle with and influence all motives and aims. They are inseparable from existence, and though important, must be made subordinate, and though irrepressible, must be held in subjection. To ignore them is as fatal to happiness and success in life as to allow them to be the objects of chief pursuit. To underrate their influence is a great mistake; it must be justly appreciated in order to maintain an effective control by the stronger forces of the intellect and the will. Let it be remembered how large a portion of human misery results from the disorderly animal passion. Much of this should be withheld from the knowledge of the young, but enough, for their own safety, may be pointed out by the mother, and be accompanied by such admonitions as seem suitable in each individual case. That the duty is a delicate one and is surrounded by diffi-

culties affords no reason for its avoidance, but rather calls for redoubled tact and a superior skill, which will not fail of their aim when instigated by the loving instinct of a true mother's heart.

"The subject is obviously not one for promiscuous discussion, but nothing is gained in private by veiling it with mystifying reserves and ingenious evasions, which serve often to keep smoldering an unsatisfied curiosity that had better be laid to rest by a little necessary plain and wholesome truth. Here, as upon many other social subjects, greater safety to the individual and to the community lies in knowledge tending to wisdom rather than in ignorance, if only the mind is maintained in a proper attitude toward the facts."

THE DANGERS OF SECRET VICE.

Fearing to suggest a habit of which the child may have no previous knowledge, a parent usually fails to warn the child of the dangers of secret vice. Few realize how prevalent is this evil, and how many the opportunities for learning of it. Schools, especially boarding schools, have long been the chief breeding places for bad habits. A servant, and especially the nurse, is frequently the instructor. A child may accidentally produce a pleasurable sensation and voluntarily repeat it without being aware that she is doing wrong. This is especially liable to occur in the presence of irritation or of any physical defect. Children can dissemble so skillfully that they may never be suspected. Because a child looks innocent is no indication that it is so. A mother must never allow her love to blind her to possible imperfections in her child. It is an injustice to the child not to warn her of the pitfalls into which she may stumble. Perfect frankness regarding so frequent a cause of general ill-health, chronic invalidism, and sometimes even insanity, will save a girl much physical and

mental suffering as well as moral loss. Even though the results may not be as grave and irremedial as is often thought, they are serious and often lasting. A mother's duty is plain.

Hygiene as a Prevention and Treatment.—To prevent as well as cure improper habits or tendencies, the child's thoughts should be diverted from sexual matters and prevented from centering upon herself. All associations and modes of life which have such a tendency should be discountenanced. A wise supervision must be exercised over books and companions. Busy occupations furnish a means of monopolizing the time and keeping both body and mind from running into morbid states. Healthful amusement and judicious exercise are important; outdoor life and interests should be encouraged. The girl should go to bed wholesomely tired, so that she may promptly fall into a sound sleep, undisturbed by dreams.

CHAPTER XII.

MARRIAGE AND COURTSHIP.

The views of various thinkers. The origin of marriage and the family. Marriage customs among different people. Courtship according to modern ideas: in Continental Europe, in England, in America. Love the basis for marriage. The nature of love, according to the poet and the philosopher. Passion versus affection. Love as a passion is transient. Passion may be followed by a steadier sentiment. Marriages based on passion are unhappy. Province of courtship to cultivate mutual esteem and friendship. The money question should be considered before marriage. A wrong standard of requirements. Marriage for position or wealth. Sincerity during courtship. The training of a girl for wifehood. Qualities needed by a workingman's wife. The proper age for marrying. The danger of early marriages. A mutual understanding about details necessary before marriage.

"Hail, wedded love, mysterious law, true source
Of human offspring."—*Milton.*

IN a book dealing with a woman's life, so important an event as marriage should not be passed over without some mention. Apart from its causal relation to many physical ills, married life has an influence upon a woman's nervous and mental conditions through which it may affect the health. Much of the misery and unhappiness that comes after marriage might be prevented by a calm reflection beforehand on its duties and responsibilities, and by a mutual interchange of ideas during the period of courtship. In the belief that a study of marriage from the historical and philosophical standpoint may make a woman better fitted for becoming the head of the household and the mother of a family, the author has collected the views of various thinkers of different countries and periods,

of which he can say with Montaigne, "I have here made only a nosegay of culled flowers, and have brought nothing of my own but the string that ties them."

THE ORIGIN OF MARRIAGE AND THE FAMILY.

The institution of marriage has its origin in a law existing throughout the animal kingdom for the perpetuation of the species.

Among many of the *animals* the parents live together for a longer or shorter period, but among others no such conjugal tie is recognized. As a rule, however, the mother is attached to her young and provides for them until such a time as they can look after themselves.

In the *human race* are seen all the gradations from the promiscuity of primitive peoples to the monogamy of modern civilized communities. From the necessary relations of the father, mother and child to each other arises the *family*. Unable to live alone, the child requires both nourishment and protection; the former is supplied by the mother, the latter by the father.

MARRIAGE CUSTOMS AMONG DIFFERENT PEOPLES.

Marriage customs vary considerably in different parts of the world. Letourneau has described them in detail.

Marriage by Capture.—The most primitive form is what is known as marriage by capture. This is practised among the natives of Australia and the surrounding islands and of the Philippines. The man captures a woman belonging to another tribe and subsequently enters into a treaty with that tribe by which, after a certain ceremony, he is permitted to retain the woman as his wife. The marriage rites in Mongolia, and among the Esquimaux, are a form of *simulated capture* which takes place after the marriage has been arranged by the parents. The Esquimaux

pretend to kidnap the girl. In Mongolia the woman in her bridal attire gallops off on a horse, pursued by the bridegroom and the wedding guests.

Marriage by Barter.—Another form of marriage is that by barter, traces of which may still be seen in a number of civilized countries. In Africa the girl belongs to her parents, who in a friendly way barter her for an ox or for a cow.

Among the Indians marriage is usually a commercial enterprise. The husband buys his wife, or, if a poor man, is obliged to work to gain her. He binds himself for a stated time to the girl's parents, for whom he must hunt, dig and scoop out canoes. In some tribes a certain period of servitude was always customary. The husband was obliged to give a tenth part of the game that he killed to the father and mother of his wife.

In ancient Greece and Rome the girl was bought by presents or by services rendered to the father. At a later period the father gave her a dowry but still might marry her without consulting her wishes.

In Scandinavia also and in certain parts of Germany the marriage was no more than a sale of the young girl, the husband having to buy her from the father. But by degrees instead of this method that of a dowry paid by the woman was substituted.

COURTSHIP ACCORDING TO MODERN IDEAS.

With the progress of civilization the condition of woman has improved. The woman has acquired a certain independence and in most civilized countries no longer is married without her choice being consulted. For many centuries the prospective husband has had to woo her and obtain her consent. Thus the period of courtship has arisen. Customs vary in different countries as to the manner of

courtship and even as to the social intercourse between young unmarried persons of opposite sexes.

Courtship in Continental Europe.—On the continent of Europe the match is usually determined upon or at least sanctioned by the parents before the young folks meet. As a rule a man may not call on a girl until he first through a third person asks to marry her, and only in the event of the consent of her parents being obtained will he be permitted to see and speak to her.

The English Idea of Courtship.—In England opportunities for social intercourse are less restricted so that young people may be able to study and know each other well. It is not customary, however, for a man to be seriously attentive to a girl for an indefinite length of time without declaring his affection or at least making his intentions known to the father.

Social Intercourse in America.—Still greater advantages and liberty of choice are afforded in America. Here men and women may form close friendships and learn to know each other's thoughts and hopes without necessarily looking forward to a closer tie. Thus a more intelligent choice is made possible.

Choice of a Life Partner.—The duties of marriage, says a French philosopher, begin before marriage. They begin with a mutual choice of the man and the woman. This choice should not be made lightly without thought, but should be determined by a serious and noble conception of the duties and end of marriage.

LOVE THE BASIS FOR MARRIAGE.

All writers agree that without love no one should marry. "Never marry but for love," was William Penn's injunction, "but see that thou lovest what is lovely." Miss Mulock can understand women's renouncing love, or dying of it, or

learning to live without it; but marrying without it, either for "spite," or for money, necessity, pity, or persuasion, is to her utterly incomprehensible. She says, "Out of duty or gratitude it might be possible to work, live, or even die for a person, but *never* to marry him."

THE NATURE OF LOVE.

The Poet's View.—From earliest times love has been the theme of poets including the Hebrew King Solomon, the Grecian Homer and the Roman Virgil. In "The Lay of the Last Minstrel" Scott gives the following description:

"True love's the gift which God has given
To man alone beneath the heaven:
It is not fantasy's hot fire,
Whose wishes soon as granted fly;
It liveth not in fierce desire,
With dead desire it doth not die;
It is the secret sympathy,
The silver link, the silken tie,
Which heart to heart and mind to mind
In body and in soul can bind."

The Philosopher's View of Love.—Somewhat different from the poet's picture of love is the philosopher's definition. Herbert Spencer says that love is habitually spoken of as though it were a simple feeling, whereas it is the most compound, and therefore the most powerful, of all the feelings. To the physical elements forming the nucleus of the whole are added the feelings produced by personal beauty that constitute simple attachments. With these there is united the complex sentiment termed affection, which is here greatly exalted. Then there is the sentiment of admiration, respect and reverence, which in this relation becomes in a high de-

THE FAMILY OF PRESIDENT THEODORE ROOSEVELT.

The beauty and nobility of motherhood and the blessings of a well-ordered home filled with children reared in health and happiness are favorite themes of the President. His is a model American family.

gree active. There comes next the feeling called the love of approbation, which is gratified in a degree passing every other experience by being preferred above all the world and that by the one admired above all others. There also is added that indirect gratification which results from the preference being witnessed by others. Further, the allied emotion of self-esteem comes into play, being agreeably excited by the proof of power at having succeeded in gaining such attachment from and sway over another. There is also the pleasure of possession, the two belonging to each other. In addition the relation allows of an extended liberty of action and of an exaltation of sympathies which doubles one's own pleasures and adds to them the pleasures of another. These all greatly exalted unite to form the mental state we call love.

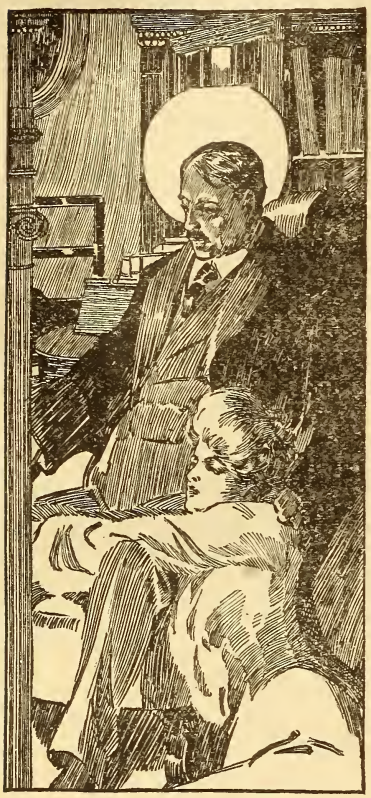
PASSION VERSUS AFFECTION.

Love as a Passion is Transient.—It is universally recognized that love considered merely as a passion usually has but a short duration. Like all other passions it tends to be changeable, transient and accidental. It generally passes away with beauty and youth, and seldom outlives the freshness of physical charms. In the opinion of Walter L. Sheldon, the distinguished ethical culturist, that sentiment which the poet tells of, and which is sung or presented in music, or pictured in the story, is simply the portrayal of a spasm in life—beautiful and entrancing as it may be. He believes that in three-fourths of the cases, if not in nine-tenths of them, it is all involved in a period of one, or two, or three years, perhaps only the few months before marriage and the few months after.

PASSION MAY BE FOLLOWED BY A STEADIER SENTIMENT.

Sheldon does not consider this sentiment by any means the only lofty aspect of the love-passion or of the love-union.

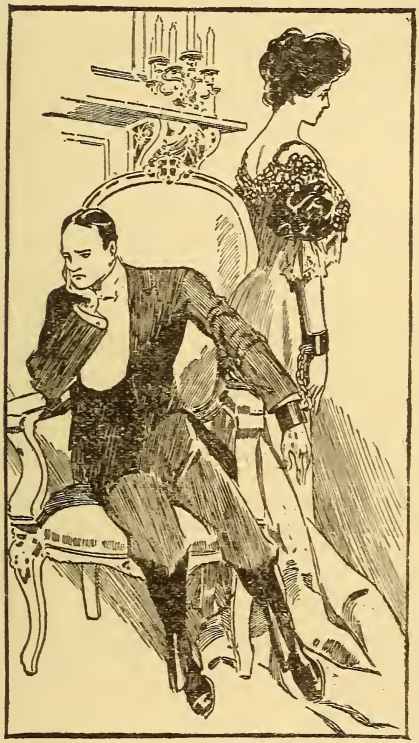
In a course of lectures on the subject of marriage he said: "That spasm may be only a short phase through which the deep feelings may have to pass — or it may not be an essential part of the experience at all. Over and over again, after the passion has subsided, it would seem as though the union were at an end. But where it was an actual attachment, something more than a mad ebullition of passion, there has come little by little another and steadier sentiment which has gradually found its place and held on to the end. Again and again there has been a tragedy because the two people have not waited for this new phase of affection to arise. They had thought their love was dead only because the transient excitement was over; whereas in reality the real love-sentiment may be only just getting started. Many of the happiest unions which have ever existed have probably been between people who went through this experience of disappointment because of the illusions which had been fostered mistakenly in their youth. Time must be given for a further reunion to arise on a spiritual plane, but where prose and poetry must jostle together in the daylight of stern reality.



When True Affection Succeeds the First Passion

The Second Experience of True Affection.—"In that second experience it is no longer the sentiment-standpoint

of two souls with a single thought or the two hearts that beat as one—a fantastic impossibility—it is an awakening to the actualities of life, and to all its possibilities. An affection may then arise which can admit of imperfections in the one for whom it exists, which can cling in spite of weakness and selfishness and caprice. And in this kind of an affection where the two may be only imperfectly united, there is a possible realization of each in the other by which the life of each does become more complete in the other. And that very completion and fullness may come in putting up with the other's imperfections, by a union for better and for worse."



After Blind Passion Has Subsided and Nothing Has Taken Its Place.

Marriages Based on Passion are Unhappy.—Franklin believed that headstrong motives of ungoverned passion result in unhappy marriages. He wrote: "Passions are extremely transient and unsteady, and love, with no other support, will ever be short-lived and fleeting. It is a fire that is soon extinguished, and where there is no solid esteem and well-cemented friendship to blow it up, it rarely lights again, but from some accidental impulses, by no means to be depended upon, which a contrariety of tempers, the fatalities of sickness, or the frowns of fortune, may forever prevent, as age most certainly will.

"What has been observed seems to point out that a blind, a sudden and intoxicating passion has a natural tendency, under its own direction, to occasion unhappy marriages, and produce scenes of grief and repentance."

Province of Courtship to Cultivate Mutual Esteem and Friendship.—"Friendship and esteem," Franklin says, "are derived from principles of reason and thought, and when once truly fixed in the mind are lasting securities of an attachment to our persons and fortunes; participate with, and refine all our joys; sympathize with, and blunt the edge of every adverse occurrence. However it may be in common life, there certainly cannot be any steady or lasting happiness in a married one where a mutual esteem and friendship of the strongest and noblest kind does not subsist. Let it therefore be the sacred business of our courtship to cultivate one, and on no account engage ourselves in wedlock without it."

THE MONEY QUESTION SHOULD BE CONSIDERED BEFORE MARRIAGE.

"How much, or how little a fortune will content us," writes Franklin, "depends chiefly on our way of thinking. Be this as it will, it should seem very proper before all marriages for both parties to know truly and fairly what they have to expect on this head, and seriously to consider with themselves whether it will be sufficient so far to answer their desires, as to prevent future murmurings and anxieties, and prudently allow them to enjoy life as they intend. All deceit herein should be carefully avoided; we may otherwise impose on ourselves and ruin all our future felicity."

A WRONG STANDARD OF REQUIREMENTS.

Many men are prevented from marrying, and many marriages are made unhappy, because the woman often has

been accustomed as a daughter to comforts and luxuries which become her standard of requirements for all time.

Only Those in Equal Circumstances Can Marry Under Such a Standard.—This wrong standard of requirements, according to Sheldon, works pathetically in making it inevitable that only those persons accustomed to the same plane of luxuries in their homes may join in the marriage relationship. The man most adapted to a woman frequently dare not think of her, because he is in humbler circumstances and would not be able to sustain her on the plane in which she has been living. Thus the actual freedom of choice is restricted.

Marriage for Position or Wealth.—A consideration before marriage of social position is almost as important as that of the money question, for the marriage of persons from different planes of society may lead both to embarrassment and unhappiness. When, however, too much attention is paid to these matters the marriage seldom results happily. Franklin says that the finer sentiments are never felt or known in that alliance where interest and fortune only are considered. Envy may be raised among the weak and silly, but pity and contempt among the wise and judicious. The slaves to dross can never be animated with a spirit of a generous, an elevated and inflexible friendship. "Gold is their idol," he declares, "'tis that they wed."

SINCERITY DURING COURTSHIP.

One of the most freqent causes of unhappiness in married life is the false view of one's mind and disposition presented during courtship in order to win the affections. Franklin considers the masking of our tempers and appearing what we really are not to be a most dangerous folly, and an imposition highly culpable, so that he is really at a loss to judge whether the absurdity or iniquity of such a scheme

be the greatest. "In such a case," he says, "we have raised and supported an affection by false appearances; when those are seen through, as most certainly they will be, what title have we to love or friendship? None, and consequently no prospect of social happiness.

"Let us, my friend, on the contrary, observe a religious sincerity, appear in our native characters, undisguised and unaffected. If under those we gain esteem and friendship, our prospects of maintaining them are as secure as our own minds and dispositions may be lasting. Let us be outwardly what we really are within, and appear in such a character as we steadfastly design to continue. Hereby we shall lay a strong foundation for our future happiness in marriage."

THE TRAINING OF A GIRL FOR WIFEHOOD.

Housekeeping is not a simple undertaking, but a most complicated one, which cannot be successfully taken up without previous training. The mother therefore should train her daughter in the management of the household by allowing her to exercise some of the duties and responsibilities connected with the house.

QUALITIES NEEDED BY A WORKING-MAN'S WIFE.

In order to elicit the opinion of the working classes on matters connected with their social condition, an Englishman named John Cassell offered prizes for the best essays on various subjects. Louisa Bell, a seamstress and the widow of a factory hand, in her prize essay on "Indiscreet Marriages," says: "Working men are much too apt to choose their wives without any reference to their former domestic lives and habits. Bitterly enough sometimes they repent this precipitancy. A working-man's wife should have been well and diligently brought up by good parents. She should know how to perform every household duty, and

be able to make or mend the clothes of the family. Her health should likewise be good. Ill-health and over-delicacy of constitution sound very interesting in some of the highly-strained fictions of which our working women are so fond; but in real, common, every-day life, strength and health in an operative's wife are beyond all sentimental notions of refinement and beauty....

Economy in Dress.—"Neatness and a due attention to dress are not only commendable, but imperative on every woman, and man also; but dressing must not be carried beyond the due bounds necessary to self-respect and the regards of others. A working woman's pride should be to possess a good stock of neatly made under-clothing; and a couple of gowns, or at most three, may then well suffice her. With economy these three gowns will last a long time...

"Cleanliness and simplicity should be the height of their ambition instead of the cheap finery which in a week's space becomes soiled and unfit to be worn.

"Very few of the working class of women, unless dressmakers by trade, know how to make their own attire.* Many are perfectly helpless in this respect. The sums they are compelled to pay in putting out such work would educate the children, and provide better fare for the family. It is no excuse to urge, as many do, that they pinch themselves and families in food or firing to provide fine clothes. Working people require good nourishment, and to subtract from a husband's dinner to buy a new bonnet or a new dress is no apology, but adds to the folly and selfishness of a passion which at all risks must be gratified....

Training in Marketing and Cooking.—"Marketing is another art—for art it is—in which a workman's wife is woefully deficient; and, lacking it, her weekly money will

*This was written of the English working woman. It probably is not true of the American factory girl of today.

seldom go far, or yield satisfactory returns. She buys inferior meat, because she can get more for her money, forgetting that it wastes in proportion to its inferiority. She buys the bony portions of an ox or sheep, because it is apparently cheaper, and never takes into account the dead loss of the bone, for the very slender portion of skill she possesses in cooking is insufficient to teach her how to convert even bones into nutriment. In this latter accomplishment she has neither experience nor any desire to gain it. She boils her stews, and makes them hard and indigestible. She cannot, in fact, cook even a potato fit to be eaten, and is utterly incompetent to render the cheap parts of meat nourishing and tender. Yet such knowledge goes far to render the working class man's home replete with comfort and happiness. Savory meals and palatable food are regarded by all, rich or poor, as one of the elements of domestic comfort—and not unreasonably; wanting these, the workman surely seeks solace in the tap-room or the liquor-vaults."

THE PROPER AGE FOR MARRYING.

Law and custom in different countries do not agree upon any one age as being the most suitable for marriage; opinions vary greatly. Speaking from the physiological standpoint, it may be said that marriage should not take place until the full growth and development has been attained. The idea of the ancients, which is still held by people in certain countries, that with puberty a woman enters upon the child-bearing period is a mistaken one. A woman should not marry before she has reached her twentieth year, nor a man before the age of twenty-four. It would be even better for a woman to wait until she is twenty-four, at which age she may be considered fully developed.

Individuals who have not yet themselves reached maturity cannot possibly beget properly developed and healthy

offspring. This is true of man and animals alike. No breeder permits his stock, however healthy, to bring forth young before they have arrived at maturity. The offspring of such are always small and weak. It is the common practice among fanciers to destroy the first litter of pups, as they are usually found to be sickly.

THE DANGER OF EARLY MARRIAGES.

In the human family, it has been noted from very early times that the children born of parents who have not themselves reached maturity are wanting to a greater or less extent in strength, stamina, courage and general development. Aristotle noticed that the children were puny and of small stature in those cities of Greece where it was the custom for young people to marry before maturity. Montesquieu observed in France that when fear of being sent to war caused great numbers of young people to marry long before the proper period, the children were small, wretched and unhealthy. To be called the child of a boy or girl has always been equivalent to being called a coward. This Macbeth well knew when he exclaimed to Banquo's ghost:

> "What man dare, I dare
> Approach thou like the rugged Russian bear,
> . . . . or, be alive again,
> And dare me to the desert with thy sword;
> If trembling I inhibit thee, protest me
> The baby of a girl."

Strahan says that a vast number of the children of the immature are born prematurely to the great danger of the imperfectly developed mothers; that a much larger percentage of them are idiotic, dumb, blind, scrofulous, and otherwise imperfect and deformed than of the children of parents generally; that they have a less firm hold on life than

the children of mature parentage, and that many succumb to scrofulous and nervous affections, a great number dying of convulsions before or during the period of the first dentition. As a class, such children are decidedly not long-lived, and those who do attain the age of maturity are generally delicate and under-sized physically, often obtuse and more or less dwarfed mentally, if not distorted, at least blunted, morally, and are wanting in spirit, energy and courage.

The Misery Caused by Early Marriages.—The folly of early marriages may be seen in its economic aspect as well as in its physiological. Mrs. Bell writes: "It is no uncommon thing among the operative class to see a couple present themselves for marriage whose united ages do not amount perhaps to thirty-four years—the girl-wife sixteen, the boy-husband two years her senior. All the money they can collect or save is spent in making holiday on the wedding day. Their home is one poor room, void of all furniture, save a bed of the humblest description, a chair or two, and a table with one or two cooking utensils. The earnings of both—for in these cases the wife is generally employed at some of the slop-work so prevalent in London, work for which the very lowest amount of remuneration is given—can barely sustain their mutual wants. When children come, what with the utter inexperience of the mother, and the reckless habits of the premature father, all speedily in that poor household becomes dirt, waste, confusion and misery. The young pair have known no youth, none of the freedom from the yoke of care, which should be one of the especial privileges of that happy time; but all becomes faded, wan, spent. The gloom of middle age comes on, when life should be in its first promise of spring; and age ensues in the middle of existence—age and premature decay. Being the very nature of immaturity to be fickle, boys and girls rashly fancy they love; and not understanding the nature of true affec-

tion, its endurance and devotion, without which it is not worthy of the name, they unite themselves in irrevocable bonds, grow soon after mutually weary and disgusted, and ultimately part even after dwelling together for years, having shared the precocious troubles which they have brought on their own hands."

A MUTUAL UNDERSTANDING ABOUT DETAILS NECESSARY BEFORE MARRIAGE.

There are many matters of importance in the married life which are seldom discussed beforehand. The man and woman are each in ignorance as to the other's views of many subjects until after the wedding day. Brutal instincts never before suspected may then be discovered, with resulting unhappiness, discord and ill-health. Neglect to fully acquaint oneself beforehand with the other's opinions in regard to the married life is unfair to both. A way should be found —direct or indirect—of settling all questions before the irrevocable step is taken.

CHAPTER XIII.

HEREDITY IN ITS RELATION TO MARRIAGE. CONSANGUINITY.

Providing for the health of the unborn. Exchange of confidences. A physician should be consulted. When these precautions are disregarded. Where the hereditary taint is slight. Drunkenness an obstacle to marriage. Insanity and epilepsy a bar to marriage. Deaf-mutism in its relation to marriage. Instinctive criminality a form of degeneracy. Consumption a disease in which heredity is sometimes a factor. The marriage of syphilitics. Consanguineous marriages.

"The gods visit the sins of the fathers upon the children."
—*Euripides.*

IT is most unfortunate that, no matter how debased, crippled or deformed people may be, they are allowed to marry and become the parents of a suffering, helpless family. Judgment and common sense should always arise to prevent the union of those who are unfit, mentally or physically, for bearing children.

Providing for the Health of the Unborn.—Dr. Richardson said: "The first step toward the reduction of disease is, beginning at the beginning, to provide for the health of the unborn. The error commonly entertained, that marriageable men and women have nothing to consider except wealth, station or social relationships, demands correction. The offspring of marriage, the most precious of all fortunes, deserves surely as much forethought as is bestowed on the offspring of the lower animals. If the intermarriage of disease were considered in the same light as the intermarriage of poverty, the hereditary transmission

THE BEDTIME PRAYER.

Every mother should teach her child to send up its evening petition if it be only the beautiful and simple,

"Now I lay me down to take my sleep, I pray Thee, Lord, my soul to keep."

of disease, the basis of so much misery in the world, would be at an end in three, or at most four, generations."

Exchange of Confidences.—Strahan advises that all persons who contemplate matrimony, or to whom attention and overtures are being made with a view to marriage, should look upon a mutual exchange of confidences upon this matter of hereditary or family disease as absolutely essential, and that, too, at an early period of the intimacy, before the affections have become deeply engaged. Too often knowledge of the existence of the family skeleton, when given at all, is only given when matters have gone so far that only those of strong will find it possible to give up the loved one because of an evil so distant and shadowy as this family taint appears to the eyes of the lover.

A Physician Should be Consulted.—Before the marriage of a person in whose family there is an hereditary disease, a physician should be consulted and the whole matter should be laid before him candidly and honestly. The decision of a competent physician should be accepted as final. The importance of adopting such a course cannot be emphasized too strongly.

Where these Precautions are Disregarded.—Untold misery is entailed by the disregard of such precautions. Strahan thus describes the day of reckoning: "In some cases it comes very soon, as where the first-born's vacant face is scanned day after day, and the heart sinks as the terrible fact forces itself upon the parent that his child is an idiot, or where the young wife suddenly loses all that made her god-like, all that made her human, and the husband finds himself with a creature in his arms at which his soul revolts. * * * *

"But in many cases the evil day does not arrive until middle life; and then, when the fear once felt has worn away, when the deception practiced has faded from the

memory, and the grave admonition of the physician is forgotten, the son in whom the father hoped to live again, the girl on whom the mother's heart is set, is torn from the family circle a raving maniac, a tortured epileptic, a drunken criminal, or, happily, a suicide. Then arise sad regrets, but it is too late; the laws of Nature have been ignored, gratification has been purchased, and the price must be paid. The sins of the fathers shall be visited upon the children."

Where the Hereditary Taint is Slight.—In addition to the cases in which the hereditary predisposition to disease is so decided that marriage should not be considered, there is a still larger class of those in whom the taint is so mitigated that, with a properly selected partner, a fairly healthy family may be reared. If a member of a neurotic family—that is one in which insanity, epilepsy, drunkenness or suicide has at any time appeared—marries a healthy member of a healthy family, the tendency to nervous disease, if not too deeply marked in the parent, may be totally lost in the children. But when he marries into another neurotic family disaster will surely fall upon the luckless children. Even when the disease has appeared in but one or two members of the family it shows the existence of the tendency and will probably reappear in the children of such an unfortunate marriage.

DRUNKENNESS AN OBSTACLE TO MARRIAGE.

There is probably no disease or vice which causes deeper degradation in the individual and more acute suffering in the family than drunkenness. It is the starting point of insanity, epilepsy, crime, and endless diseases in posterity.

Idiocy is often due to the family taint of drunkenness, about twenty-five per cent. of the idiots being children of intemperate parents. In Norway, when the duty on liquor was removed and intemperance began at once to increase

among the people, idiocy increased 150 per cent. and insanity 50 per cent. among the children born during the next ten years.

In the following family history, given by Morel, the degenerating effect of drunkenness upon the stock is well shown:

First Generation.—Father, a drunkard.

Second Generation.—Son, a drunkard. Was disgustingly drunk on his marriage day.

Third Generation.—Seven grandchildren. First died of convulsions. Second died of convulsions. Third was an idiot at twenty-two years of age. Fourth, melancholiac, with suicidal tendency—became demented. Fifth, peculiar and irritable. Sixth, has been insane repeatedly. Seventh, nervous and depressed, and indulges in most despairing anticipations as to his life and reason.

No woman should marry a confirmed drunkard; nor should she become engaged to the son of one until his disposition and character have been most carefully inquired into.

INSANITY AND EPILEPSY A BAR TO MARRIAGE.

When insanity is inherited in any family, it usually appears in only one, two or three members of each generation; but it may be transmitted to the next generation by those who do not themselves become insane. A person who at any time has been insane should never marry. A member of a family in which any mental disorder has appeared should not marry into another neurotic family. If, however, such a one be a man, and show no evidence himself of the family failing, he may sometimes marry into a healthy family with but a minimum of danger to the offspring, although it were best not to run the risk of progeny. Such permission, however, can never be granted to a woman, as

there are certain epochs in her life when the chances for losing her reason are very great if there be an hereditary taint of insanity in her family.

Epilepsy may practically be regarded as an hereditary affection. Although at times it may seem to be brought on by an injury or fright or nervous irritation it seldom attacks one who does not inherit a neurotic temperament. In fact when there is insanity in a family the children are liable to be epileptic. Consequently one subject to this disorder should not marry.

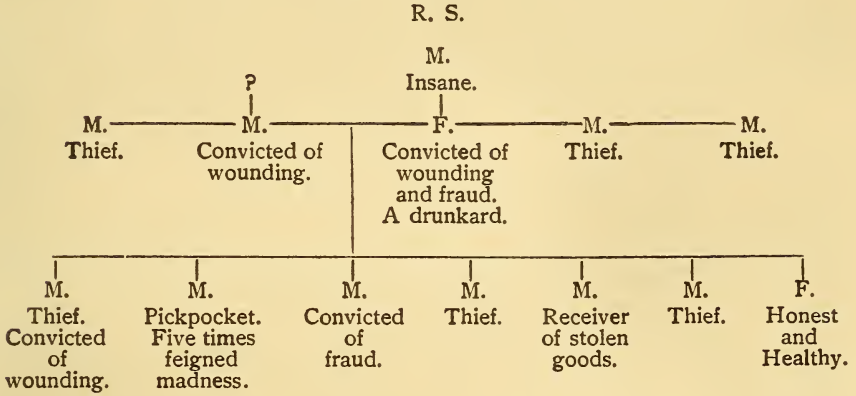
DEAF-MUTISM IN ITS RELATION TO MARRIAGE.

There are two classes of deaf mutes which must be carefully differentiated before the question of marriage is considered. In one family predisposition plays no part; in the other the disease is of an hereditary character. Where deafness has followed some injury to the organ of hearing before or shortly after the power of speech has been attained, it should not be a hindrance to marriage, as it is never transmitted. Deafness present at birth, however, is usually dependent upon some family defect, being a condition of degeneracy closely allied to idiocy. Clouston considers it a physiological sin that marriage between such persons should be legal.

INSTINCTIVE CRIMINALITY A FORM OF DEGENERACY.

The habitual criminal is an abnormal type of individual, the result of a family degeneracy. He is a moral imbecile, lacking the moral sense in the same manner as the idiot lacks intelligence. The hereditary character of this form of degeneracy, which is known as instinctive criminality, has been recognized from the earliest times. Like every family trait, it may be transmitted to all or only to some

of the members of each generation. This is well illustrated in the following genealogical tree given by Rossi:



Of all the persons convicted of wilful murder in England and Wales between the years 1879 and 1888, 32 per cent. were found insane.

It is needless to say that a member of a degenerate family should never marry and thus transmit the criminal tendency.

HEREDITY IS SOMETIMES A FACTOR IN CONSUMPTION.

Consumption is a contagious rather than an hereditary disease. It is caused by a minute germ which, on entering the system, produces destructive changes, chiefly in the lungs. The germ is present in the spittle of consumptives and may be transmitted by kissing or using the same spoon, fork or tumbler. It also is set free from sputum which has not been disinfected and may enter the lungs with the inspired air.

Those Liable to Consumption.—While consumption itself is not inherited, it often occurs in persons who from birth are characterized by lowered vital resistance.

This condition of inability to resist disease may be *transmitted.* It is often found in those who have a family

history of consumption. It may also occur in those whose parents have lowered vital energy caused by other affections, such as alcoholism, syphilis, cancer, diabetes, unfavorable age for or too rapid procreation, or privation, exhaustion or depression affecting the mother during pregnancy.

As a rule, however, the condition is *acquired.* It may result from depression, as grief, disappointment, fear, shame, anxiety, shock, religious gloom and terror. It is often caused by privation, including want of proper food, want of air, want of heat, want of cleanliness, want of shelter, want of clothing, want of light and want of enjoyment. Very frequently it comes from exhaustion, such as dissipation, over-eating and over-drinking, over-exercise, exhausting or unresting labor, physical or mental, prolonged lactation, lactation continuing during pregnancy, too frequent and rapidly succeeding pregnancies, the effects of certain diseases (typhoid fever, measles, influenza, diabetes), and from violent or consuming emotions, such as rage, jealousy, greed, inordinate ambition, and the like.

Persons who have this condition of underdevelopment and lessened vital force may transmit it to their children. If they marry into a family with the same failing, this tendency in the offspring will be more marked. As a rule, however, by careful attention to the laws of hygiene and the methods of living described in this book, the tendency to consumption may be overcome. A person with such an hereditary taint, by proper living, may not only avoid having consumption herself, but may so eradicate this family failing that it will not appear in the children.

THE MARRIAGE OF SYPHILITICS.

Syphilis is not an hereditary disease, strictly speaking, but it may be transmitted to the offspring from either parent. A person who has once had this disease should

not be married until a physician has declared the disease cured and has given his permission for the marriage.

The period of danger may last from two or three years after the onset of the disease to ten or fifteen years after it, depending upon the faithfulness with which the treatment has been carried out.

CONSANGUINEOUS MARRIAGES.

The question of consanguineous marriages is usually settled by the law, in many States the marriage of first cousins being forbidden. There is no physiological reason, however, why such marriages should not take place. A committee appointed by the New York State Medical Society to investigate the influence upon the offspring of consanguineous marriages stated in its report that if the family be free from degenerative taint, marriage among its members in no way diminishes the chances of healthy offspring. Other authorities have also agreed that there is no greater amount of disease or deformity among the offspring of parents related to each other by blood than among the children of parents not so related, provided the parents be equally free from tendency to disease or degeneration.

Such marriages, however, are almost certain to transmit in an accentuated form any disease or defect already present in the family. Inasmuch as at the present time there can scarcely be found a perfect human family—almost every family having a taint or tendency to disease of some kind—and as all such imperfections are transmitted and rapidly deepened in the family by the intermarriage of its members, it is best that such unions in all cases be forbidden. They should be discountenanced even in healthy families, for such union may wake up some pathological character which has been latent for one or two generations.

CHAPTER XIV.

THE BASIS OF HAPPINESS IN MARRIED LIFE.

Love is kept by art. The influence of the personal appearance. Care in the personal appearance. Dressing for the world rather than for the home. The invasion of the home by conventionalities. The husband neglected for the children. The avoidance of contention. The economic dependence of woman. Humiliation dwarfs a woman's character. The question of pocket money. Race Suicide. Healthy home life necessary.

"Unjustly all our nymphs complain,
Their empire holds so short a reign,
Is after marriage lost so soon,
It hardly holds the honeymoon:
For if they keep not what they caught,
It is entirely their own fault;
They take possession of the crown,
And then throw all their weapons down.
Though by the politician's scheme,
Who'er arrives at power supreme,
Those arts by which at first they gain it,
They still must practice to maintain it." — *Swift.*

LOVE IS KEPT BY ART.

DEAN SWIFT says that the reason why so few marriages are happy is because young ladies spend their time in making nets to catch men's hearts, not in making cages to keep them. The same thought was expressed by Ben Jonson when he remarked that "Love comes by chance, but is kept by art." According to Benjamin Franklin happiness in married life is preserved by

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MOTHER THE QUEEN OF THE HOUSE.

After the children come to manhood and womanhood the mother and father find old age made happy by the presence of those able to grace the hearthstone and help bear the burdens of life.

carefully avoiding litigious wranglings and capricious contentions, and by cultivating dispositions of reciprocal condescension and such an uniformity in tempers that the pleasures of one may be the pleasures of both.

HAPPINESS IN MARRIED LIFE.

"An ambition," he says, "to please each other, and oblige by all the little turns of behavior, that so frequently will occur to a polite and well-disposed inclination, must have a wonderful good effect to support our affections, secure mutual esteem and friendship. Minds of any refined cast have an exquisite relish for these soothing and expressive marks of tenderness, and they can't fail of meeting with a most grateful reception. We should make it our mutual study to render ourselves agreeable and amiable by all the innocent arts of invention, and every laudable stratagem of conduct. . . The little oversights and sallies of frailty, to which human nature is ever liable, and from which the most perfect characters are not exempt, should be passed over and die unnoticed."

The Influence of the Personal Appearance.—It is remarkable what an influence personal appearance exerts on marital happiness. Too little attention to dress in the

privacy of the home and too much in the conventionality of the outside world has frequently been the cause of dissatisfaction.

Care in the Personal Appearance.—Franklin advises people to be most careful and exact in their personal appearance. "It is surprising," he says, "but too common to see (amongst both sexes) many, who before marriage were very assiduous in the adorning and neatness of their persons, that afterward grow negligent and highly culpable by the reverse, which attention and remissness, I verily believe, is often one of the first and most effectual methods to cool the affection, and estrange the hearts of many a couple. And herein, according to the most impartial observations I have made, the ladies are most blamable."

Dressing for the World Rather Than for the Home.—Sheldon asserts that "the wife dresses too much with an eye to the outside world, rather than with a thought as to what will please her husband's eye. She may wonder why he does not take more interest in her toilet, and may not be aware of the fact that her husband's taste may not be that of her conventional women friends. What might charm him would perhaps be simplicity, while the world outside asks for display. Why is it that a wife thinks less about the charm of her dress at her private dinner-table to the one pair of eyes opposite to her, than she does about the dress she is to wear if there are to be guests at the table? Why is it that the world's eye in this regard may become of even greater importance than the eye of the husband?"

The Invasion of the Home by Conventionalities.—The domination of the sanctity of our homes by the outside world is an appalling circumstance which menaces the institution of the family, according to this same writer. "For just this reason," he says, "a kind of estrangement may set in between husband and wife, making the tie between them prosaic and

common-place. Each is a little disappointed in the other, partly for the reason that they have thought too little about pleasing each other in the home and about having the home and home-life just for the sake of themselves.

"It is my conviction that the woman, who, if she followed her own spontaneous inclinations, would be the home-maker and care supremely to have a perfect home for its own sake, has for a time been carried out of her own most instinctive disposition, through a transient submission to conventionality.

"If, as is true to-day over many parts of the world, the wife is little by little growing disappointed in the husband, as being prosaic and not caring for the family or for herself in the way she had hoped, I believe one of the causes for it lies right here. The man, the husband, does not feel at ease or at home in many parts of his own house. He does not feel at home even with his own wife. He is vaguely conscious that the woman of his choice belongs not only to him, but to a great show-world outside. Down in his heart there is a lurking disappointment. The home does not seem to come overwhelmingly first in the thought of his wife."

THE HUSBAND NEGLECTED FOR THE CHILDREN.

Sheldon also asserts that nowadays the husband is often neglected by the wife for the sake of the children, where he is not neglected for the sake of the conventional outside world, although he believes that every mother will be up in arms against him at this point. The average mother will ask, "Can a woman do too much for her children?" He answers: "Yes, especially where the service for the children may not apply to their actual needs, but be rendered in order to keep up to a conventional standard. In this way, too, the man is led to feel as if he has a house and home, not for himself, but for his children. The tendency here has gone to an

extreme. In the old days it was otherwise. Wife and children were all neglected for the sake of the head of the family. He was the sovereign and it was a brutal sovereignty.

"To-day the situation is precisely the contrary. The needs of the child come first. The mother asks it and the father and husband grants it from a sense of duty, if for no other reason. But in many a man, at the present time, there is developing on this score a spirit of rebellion. The wife may not be conscious of it because of her devotion for her children. Later on she becomes aware that something has happened in the lack of interest for herself or the home on the part of the husband. The cause for this, however, may never dawn upon her, because the change took place in those years when she was completely rapt up in her little ones."

THE AVOIDANCE OF CONTENTION.

The conditions described by Sheldon are not the only ones that are responsible for unhappiness in married life. Misunderstandings between husband and wife are often caused by disputes and contentions over little things. Neither listens to Pope's advice:

> "At every trifle scorn to take offense,
> It always shows great pride or little sense."

Unhappiness may often be avoided and the mutual love and respect retained until the end by observing the warning of Swift:

> "Let prudence with good nature strive,
> To keep the flame of love alive,
> Then, come old age whene'er it will,
> Your friendship shall continue still:
> Thus a mutual, gentle fire,
> Shall never but with life expire."

"A little observation and reflection on the common scenes of matrimony," wrote Franklin, "may supply us with

many instances to show how much these trivial jarrings spoil the harmony, and interrupt the felicities of it.

"What fermentations and heats often arise from breaking of china, disordering a room, dinner not being ready at a precise hour, and a thousand other such impertinent bagatelles.

"But trifling as these things may be in themselves, it is too notorious they often occasion such feuds and feverish animosities amongst married people, as frequently give a bitter tincture to and discompose many hours of their lives; and are sometimes of so bad a consequence as to inflame their minds with such spleen and distaste that irreparable breaches are thereby opened."

THE ECONOMIC DEPENDENCE OF WOMAN.

The emancipation of woman from her original position as a slave in the household has been most erratic, according to Sheldon. Whereas there has come a freedom in the disposal of her hand before marriage, and the abolition of slavery after marriage, there is still to a large extent a dependence on the economic side which does practically hold woman to a position of serfdom. "It is," he says, "perhaps the most painful experience through which the average woman must undergo, who has no income of her own, when, after the first year of marriage and the two have settled down to an equilibrium of existence, she finds herself compelled to resort to a multitude of petty artifices in order to secure the small sums essential for her personal needs or requirements. This has stifled the budding soul of more women than almost any other experience. And the man may discover it only when it is too late. It may perplex him why his marriage-life has grown prosaic; why the charm has been vanishing out of his home life.

Humiliation Dwarfs a Woman's Character.—"There is

a certain degree of dependence which may be ennobling on the character. But if it is carried beyond a given point, it works in precisely the contrary way; the nature is stunted or dwarfed. And this dwarfing process is going on in thousands of families all over our land, because the wife is subject to so much of this exacting humiliation. The man himself may suffer indirectly even more from this than the woman. He has lost something out of his married life which cannot be replaced. Instead of the wife and comrade, little by little he discovers that he has only a housekeeper or a mother for his children. And the responsibility for it may lie altogether at his own door. He has failed to treat his wife as a comrade; and they are both victims of his mistake."

The Question of Pocket Money.—A writer many years ago in a woman's magazine held that on account of the treatment of wives by their husbands as regards pocket money, many a nice, bright girl, who has become self-supporting and knows the comfort of freedom in the matter of spending money, hesitates and needs a very strong attraction before she is drawn into marrying anyone, thus shutting off from the race the very force and talent which it needs in mothers.

"If a wife has not sufficient wisdom to know when to spend money in accordance with her own and her husband's means," writes this contributor, "she has not sufficient wisdom to keep a house or to bring up her children, and she should not, in fact, be allowed to marry. Of a man having a wife of discretion, yet, still unwilling to let her spend as she sees fit, it may be said that he has no business to marry and establish a household unless he can afford a housekeeper and a housekeeper's wages, and pay those wages to the wife every Saturday night, or at such other time as she chooses. The woman who combines in herself, as the majority of wives do, the office of housekeeper, cook, cham-

ber-maid, governess, nurse, and seamstress, ought to have something more than her clothes and the title of mistress in recompense. When she is discharged from any of these offices, and has a servant of her own whose wages are regularly paid, it is still something of a humiliation to her to see that person with more money than she herself, able to please her whim in purchases, always with a dollar or two in her pocket ready for the emergency of charity, or gift, or expenditure, while she herself in that rank and condition where more is expected of her is unable to take a ticket for this affair, or give a coin to that beggar, or send to the shop for a purchase until she has asked for the money."

PRESIDENT ROOSEVELT ON RACE SUICIDE.

One of the most important problems of the married life confronting the American people of to-day is that of race suicide. In an address before the National Congress of Mothers at their meeting at Washington, in March, 1905, President Roosevelt said: "The Nation is in a bad way if there is no real home, if the family is not the right kind, if the man is not a good husband and father, if he is brutal or cowardly or selfish, if the woman has lost her sense of duty, if she is sunk in vapid self-indulgence or has let her nature be twisted so that she prefers a sterile pseudo-intellectuality to that great and beautiful development of character which comes only to those whose lives know the fullness of duty done, of effort made and self-sacrifice undergone....

Healthy Home Life Necessary.—"No piled-up wealth, no splendor of material growth, no brilliance of artistic development, will permanently avail any people unless its home life is healthy, unless the average man possesses honesty, courage, common sense, and decency, unless he works hard and is willing at need to fight hard; and unless the average woman is a good wife, a good mother, able and will-

ing to perform the first and greatest duty of womanhood, able and willing to bear, and to bring up as they should be brought up, healthy children, sound in body, mind and character, and numerous enough so that the race shall increase and not decrease....

Woman's Task, Motherhood.—"Just as the happiest and most honorable and most useful task that can be set any man is to earn enough for the support of his wife and family, for the bringing up and starting in life of his children, so the most important, the most honorable and desirable task which can be set any woman is to be a good and wise mother in a home marked by self-respect and mutual forbearance, by willingness to perform duty, and by refusal to sink into self-indulgence or avoid that which entails effort and self-sacrifice....

"No mother has an easy time, and most mothers have very hard times, and yet what true mother would barter her experience of joy and sorrow in exchange for a life of cold selfishness, which insists upon perpetual amusement and the avoidance of care, and which often finds its fit dwelling place in some flat designed to furnish with the least possible expenditure of effort the maximum of comfort and of luxury, but in which there is literally no place for children?

Respect Due a Good Wife and Mother.—"The woman who is a good wife, a good mother, is entitled to our respect as is no one else; but she is entitled to it only because, and so long as, she is worthy of it. Effort and self-sacrifice are the law of worthy life for the man as for the woman, though neither the effort nor the self-sacrifice may be the same for the one as for the other....

The Woman who Merits Contempt.—"There are many good people who are denied the supreme blessing of children, and for these we have the respect and sympathy always due to those who, from no fault of their own, are denied

THE MOTHER'S MORNING DELIGHT.

It is the mother's pleasure in the morning to give the baby its bath. The child, while it is taken from its crib by the sunny window and made ready for the bath, plays in its mother's arms.

any of the other great blessings of life. But the man or woman who deliberately foregoes these blessings, whether from viciousness, coldness, shallow-heartedness, self-indulgence or mere failure to appreciate aright the difference between the all-important and the unimportant—why, such a creature merits contempt as hearty as any visited upon the soldier who runs away in battle, or upon the man who refuses to work for the support of those dependent upon him, and who, though able-bodied, is yet content to eat in idleness the bread which others provide.

"The existence of women of this type forms one of the most unpleasant and unwholesome features of modern life....

The Mother "Blessed."—"The man is but a poor creature whose effort is not rather for the betterment of his wife and children than for himself; and as for the mother, her very name stands for loving unselfishness and self-abnegation, and, in any society fit to exist, is fraught with associations which render it holy.

"The woman's task is not easy—no task worth doing is easy—but in doing it, and when she has done it, there shall come to her the highest and holiest joy known to mankind; and having done it, she shall have the reward prophesied in Scripture; for her husband and her children, yes, and all people who realize that her work lies at the foundation of all national happiness and greatness, shall rise up and call her blessed."

CHAPTER XV.

PREGNANCY: THE DEVELOPMENT OF THE CHILD.

An explanation of Nature's mysteries. Reproduction: In plants; in the lower animals; in man. Conception. The development and nourishment of the embryo or unborn child. The placenta and umbilical cord. Changes in the mother during pregnancy. Lightening.

"Come forth into the light of things,
Let Nature be your teacher."

—*Wordsworth.*

The physiology of so important an event as pregnancy should be understood by every woman. Emphasis has already been laid on the necessity of a mother explaining Nature's mysteries to her daughter in an intelligent and tactful manner. Matters of this kind, however, should be regarded in a broad light, the whole world being included in the view. The description given on the following pages, it is hoped, will not only make the matter clear to the mother, but will also suggest to her a way to present this delicate subject to her daughter.

REPRODUCTION THROUGHOUT NATURE.

It has been shown earlier in this book how Nature has provided all living matter with the power of reproduction, or of forming new members of the family.

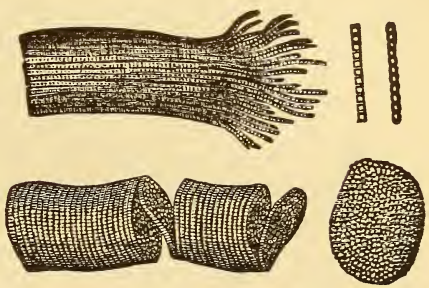
Everything Composed of Cells.—When seen under the microscope, all plants and all animals are found to be composed of minute bodies, called cells. The shape and kind

of these cells vary in different structures. The roots of a tree are made of one kind of cell, the leaves of another, the bark of a third, the fruit of still a fourth, and so on. In the same way skin, muscle, bone, hair and nails are each composed of a different kind of cell.

Lung Cells. (Magnified.)

All new individuals begin with one cell, which divides and subdivides until it forms many cells, each of which grows and divides again. The ovule in a seed divides, some of the cells forming roots, others becoming stem and leaves.

Various Methods of Reproduction.—The original cell that forms the new body is produced in various ways. In the yeast plant and in the hydra the new cells appear as *buds* on the parent cell. Sometimes, as in seaweed and in the green slime or algæ seen on stagnant pools, the parent cell *divides* into two daughter cells. In all higher forms of life, however, a *union of two dissimilar cells* is necessary to form the first cell of the young organism. Most plants and animals develop certain cells, whose sole object is to perpetuate the species. These cells usually are of two kinds. One kind becomes converted into the young cell as soon as it comes in contact with the other. The first is called the female cell, the second the male cell.



Muscle Cells. (Magnified.)

In flowers the pistil is the female element, its stigma and style forming a tube leading down to a sort of nest, called the ovary, in which lies the ovule or female reproductive cell. The pollen on the stamens represents the male reproductive cell. When blown by the wind, or carried on the antennæ or sucking tubes of insects down the style of the pistil it fertilizes the ovule which lies at the bottom. As soon as the ovule comes in contact with the pollen it begins to divide and finally becomes a seed, capable of producing another plant.

In animals, as a rule, a union of the male and female elements is necessary. As the impregnated cell divides, a living creature begins to be formed, which, at first, is not always like the parent. From the egg laid by the butterfly crawls the caterpillar, which later builds its cocoon and emerges a fully developed butterfly. The tadpole is hatched from the egg of a frog and, after continuing to grow as a water animal, it one day sheds its skin and becomes a frog.

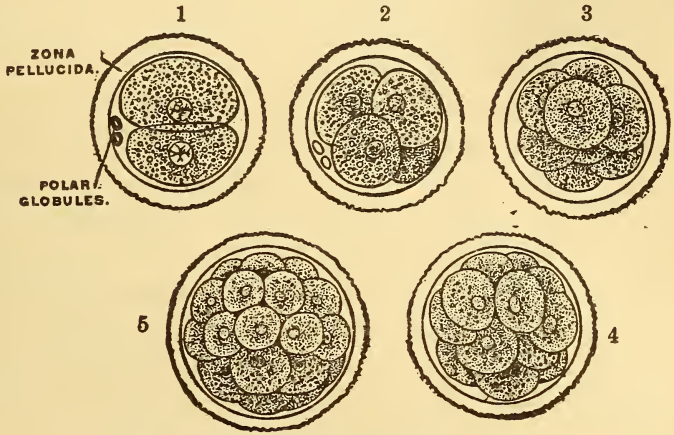
REPRODUCTION IN HUMAN BEINGS.

Every month a woman discharges from the ovary a mature ovum, which enters the funnel-shaped end of the Fallopian tube and travels down toward the uterus. If at this time any male cells, called spermatazoa, happen to be in the tube, having worked their way up through the uterus from the vagina, one of them may penetrate the ovum or female reproductive cell.

The moment the two cells unite, conception has occurred, and the resultant cell formed by this union is the beginning of the future child. This cell divides into two cells and then into four, eight, sixteen, and so on, as is shown in the figure on the following page.

As the cell or egg divides it passes into the cavity of the uterus, where it lodges in one of the folds of the thick-

ened lining membrane. Here for nine months it develops, first into an embryo with gills and a tail, then into a fetus or crudely formed child, and finally into a normal infant. The shell or outer part of the egg is formed by the membranes. The developing child lies surrounded by the waters or amniotic fluid. As the cells continue to divide, they become specialized, some going to form the skin, others to make muscle, bone, and so forth.



THE DEVELOPING OVUM.

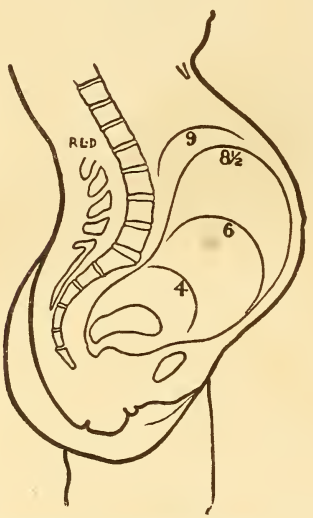
The dividing cells which are to form the living child are here shown. The numbers indicate the different stages in the development of the ovum.

Nourishment of the Child within the Womb.—The fetus is nourished by the mother's blood, which enters its body at the umbilicus or navel. Three long blood-vessels extend from a thickened spot on the uterine wall, called the *placenta* (which forms part of the afterbirth), to the child's navel, at which point they enter the body. These vessels are surrounded by a jelly-like substance, which protects them from injury and with which they form the *umbilical cord.*

Shortly after the child is born the umbilical cord is tied off and severed, the infant's end then drying up and later falling off.

CHANGES IN THE MOTHER DURING PREGNANCY.

Changes occur during pregnancy in the mother as well as in the child. The womb or uterus becomes enlarged as the fetus increases in size; it rises from the pelvis into the abdomen at the fourth month, is at the level of the navel at the sixth month, and at the ninth month reaches its highest point, a little below the pit of the stomach. The accompanying illustration shows the comparative size and position of the uterus during the different periods.



SECTION OF THE ABDOMEN IN A PREGNANT WOMAN.

Showing the size of the womb at the different periods of pregnancy. The figures indicate the month of pregnancy.

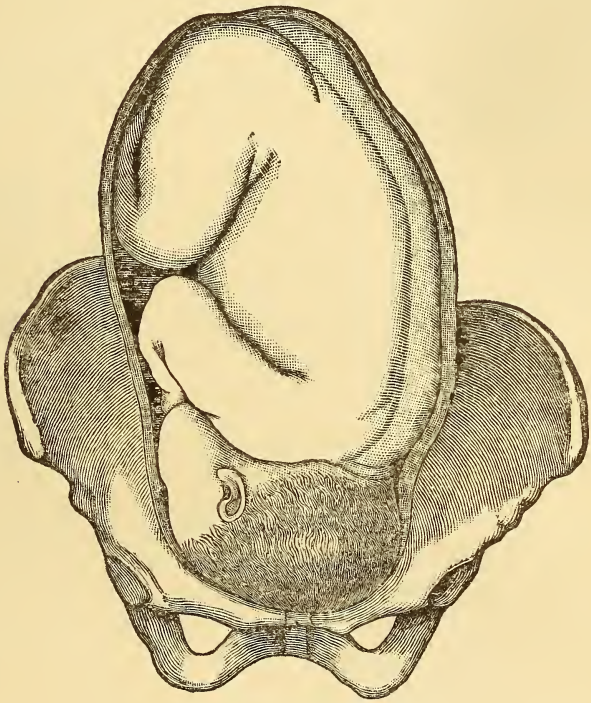
During the ninth month the child's head leaves the abdomen and enters the pelvis, the top of the womb dropping to where it was at the eighth month. This occurrence is familiarly spoken of as "lightening" or *dropping*.

The walls of *the abdomen* become stretched, with the formation in the skin of white, bluish or reddish streaks. They also become loaded with fat, giving a fuller appearance to the figure.

Pressure of the uterus on the bladder and rectum interferes with their functions, causing *constipation* and *frequent urination.* Pressure on the veins may give rise to *hemorrhoids,* or piles, and to *varicose veins* of the legs and vulva or external parts. The nerves of the uterus are so upset by the stretching that

they carry the irritation to the stomach, thus producing *nausea* and *vomiting*.

The *nervous system* itself also undergoes a change, which shows itself in alterations in disposition, in perversions of taste, such as a longing for pickles or some other odd article of food, in a tendency to become melancholic



The Child in the Womb.

and in the occurrence, at times, of severe neuralgia, especially of the face and teeth.

For some unknown reason the teeth during pregnancy exhibit a tendency to decay. It is a common saying that a woman loses a tooth for each child she bears.

CHAPTER XVI.

THE SYMPTOMS OF PREGNANCY.

Determination of the existence of pregnancy. The commonest symptoms of pregnancy: The cessation of menstruation; Morning sickness; Appearance of the face; Changes in the breasts; Changes in the size, shape and appearance of the abdomen. Quickening: Alterations in the nervous system. Change in color of the mucous membrane. Hearing the fetal heart sounds. The physician's examination.

"Coming events cast their shadow before."—*Campbell.*

DETERMINATION OF THE EXISTENCE OF PREGNANCY.

AS a rule, it is not a difficult matter to determine whether a woman is pregnant, although cases have occurred in which mistakes were made. Physicians have operated on a supposed abdominal tumor only to find a pregnant uterus.

There are certain symptoms, however, which are usually present in a woman who is with child. But they may occur in conditions other than pregnancy, and they may be absent, though the woman be "in a family way." The physician is the only person who is competent to decide.

The Commonest Symptoms of Pregnancy.—The most common symptoms of pregnancy experienced by the mother are (1) cessation of menstruation, (2) "morning sickness," (3) changes in the size, shape and appearance of the abdomen, (4) changes in the breasts, and (5) quickening.

THE CESSATION OF MENSTRUATION.

As soon as a woman becomes pregnant, menstruation usually ceases. But its absence may depend upon other

OUTDOOR SPORTS FOR WOMEN.

Lawn tennis, as shown in the figure at the left, and golf, as indicated by the figure at the right, are two of the best sports for women, giving needed exercise and developing the figure. See chapter on Work, Rest and Recreation.

causes, as in the condition known as amenorrhea, which is described in Chapter XXXIV on "Disorders of Menstruation." In some few cases there is a slight bloody discharge during the first three months of pregnancy. It will thus be seen that the sign is not an invariable one.

THE MORNING SICKNESS.

At the sixth or seventh week of pregnancy nausea and vomiting appear, usually lasting to the third month, being worse when the woman first arises from bed in the morning, whence it derives the name "morning sickness." It is not always present and may exist in many other conditions.

THE APPEARANCE OF THE FACE.

After conception has occurred, dark, irregular splotches, resembling freckles, called chloasmata or liver marks, may appear in the brow and cheeks, sometimes running so closely together as to form the so-called "mask of pregnancy." Dark rings also often form under the eyes. These, too, occur in other conditions and cannot be regarded as diagnostic.

CHANGES IN THE BREASTS.

During pregnancy the breasts become enlarged and distended. The veins can be plainly seen. As the distension continues, white lines or striæ, resembling cracks, appear in the skin.

Appearance of the Nipples.—The nipples themselves also become more prominent. The colored areola surrounding them becomes darker in color and broader in extent. Little glands in this areola often become enlarged to the size of buckshot and project conspicuously. As pregnancy advances, a drop or two of a cloudy liquid, called colostrum, can be squeezed or milked out of the breast. The woman usually experiences a tingling sensation in the

breasts, owing to their congestion, and later a feeling of fullness when the colostrum begins to appear.

All of these changes may occur without the existence of pregnancy; some, and rarely all, may be absent, even though that condition be present.

CHANGES IN THE ABDOMEN.

Increase in Size.—There is a progressive enlargement of the abdomen as the womb increases in size. Enlargement of the abdomen, however, occurs in many other conditions, and, on the other hand, it has existed without attracting the woman's notice.

Alteration in Shape.—After the ninth month a change takes place in the shape of the abdomen as the child's head sinks into the pelvis and its body falls a little forward. This phenomenon is known as "lightening" or "dropping." With it there is a lowering of the waist line; the upper part of abdomen becomes flatter and the navel more prominent.

Change in Appearance.—The umbilicus or navel becomes gradually pushed out or everted. At the sixth month it is on a level with the surface of the abdomen, and later begins to pout. It is surrounded by a black ring. From this ring a black line extends along the middle of the abdomen upward to near the pit of the stomach and downward to the pelvis. The line is given the name of linea nigra, which means black line.

Owing to the stretching of the abdomen, white lines or striæ, looking like cracks, appear in the skin, especially in the region of the flanks and the hips and along the outer side of the thighs.

THE OCCURRENCE OF QUICKENING.

A living fetus, or unborn child, moves about within the womb, but not until about midway between the fourth and fifth months are the movements powerful enough to

be felt by the mother. The sensation the mother experiences when the fetus moves is called "quickening." It has been felt as early as the third month, but may not be noticed at all until the last month. During the advanced stages of pregnancy fetal movements can usually be felt by a person laying a cold hand suddenly upon the woman's abdomen. There are two kinds of sensations conveyed to the hand: a heaving and a sensation compared to that of a finger-tap under a blanket.

Necessarily, movements are never felt when the fetus is dead. They may be undetected even when it is living. There are many things, moreover, which may simulate these movements and thus lead one astray.

ALTERATIONS IN THE NERVOUS SYSTEM.

A pregnant woman usually exhibits some disorder of the nervous system, becoming more sensitive and irritable. Her disposition may change from placidity to vivacity, or from amiability to sullenness or moroseness. Sometimes the moral nature is affected, with impairment of the ability to distinguish between right and wrong. The appetite may become very fanciful and the most unusual articles of diet may be craved. Often a woman experiences a sense of dizziness or a feeling as if she were going to faint, or she may even lose consciousness. Neuralgia, especially of the face and teeth, is not uncommon.

Such symptoms, of course, cannot solely be regarded as indicative of pregnancy.

CHANGE IN COLOR OF THE MUCOUS MEMBRANE.

During the second half of the period of gestation, and sometimes as early as the second month, the mucous membrane of the vagina assumes a bluish or purplish hue, which has been compared to the color of the lees of wine. About

the same time the color of the mucous membrane about the entrance changes from a pink to a bright scarlet.

These are not infallible signs, however, as they may be produced by other conditions and may even be absent throughout the whole of pregnancy.

HEARING THE FETAL HEART SOUNDS.

After the fifth month, if the fetus is alive, its heart sounds can usually be heard by applying the ear to the woman's abdomen. The place where they commonly are heard best is a spot about an inch below the navel, to the left (sometimes to the right) of the median line. The heart of the unborn child beats at the rate of 120 to 160 a minute. Two sounds are heard with each beat. The sound has been compared to the ticking of a watch under the pillow. It must not be mistaken for the woman's heart beat, which is a single sound, keeping time with her pulse. Many conditions may prevent the fetal heart sounds being heard.

THE PHYSICIAN'S EXAMINATION.

There are some signs of pregnancy that are found on an internal examination, which, of course, only the physician can make. It is impossible, however, for any one to make a positive diagnosis of pregnancy before the sixth week, and sometimes not until the fourth month.

THE DISORDERS OF PREGNANCY.

The disorders and diseases that occur during pregnancy will be considered in a later chapter.

CHAPTER XVII.

THE LIFE OF A WOMAN DURING PREGNANCY.

Diet. Dress: hygienic or maternity waists and corsets; the abdominal bandage. Exercises to strengthen the muscles and preserve the figure. Bathing during pregnancy. Work, exercise and rest. Maternal Impressions. Keeping the mind in pleasant channels. How to render labor easy. Care of the breasts during pregnancy. Preparation of the nipples. Care of excretions and discharges: the urine; the bowels; leucorrhea. Marital relations during pregnancy.

"For life is not to live, but to be well."—*Martial.*

MANY women make no change in their lives with the advent of pregnancy, but continue as though their condition is attendant with no danger. Such a view is erroneous; the border line between health and disease may easily be passed during pregnancy unless the woman is careful about her mode of life and reports to her physician any unusual symptoms that may develop. The health of the child as well as of the mother depends in great measure upon the hygiene of this period.

THE DIET DURING PREGNANCY.

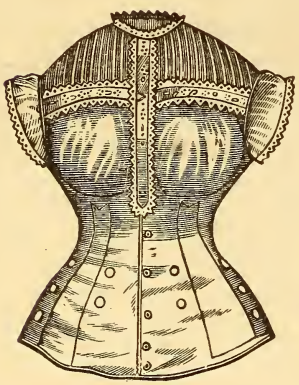
During pregnancy the diet should be simple and in accordance with the directions in Chapter VI. Meat should be eaten but once a day and then only in small quantities. Cereals, fresh vegetables and fruits should form the principal articles of food. Milk should be taken in large quantities —plain, diluted with plain or effervescing water or with lime-water, cooked with vegetables, or made into puddings,

etc. Rich and indigestible food must be avoided. Water should be drunk freely, at least one or two quarts during the day. Alcoholic drinks are prohibited. The woman should also take very little tea or coffee.

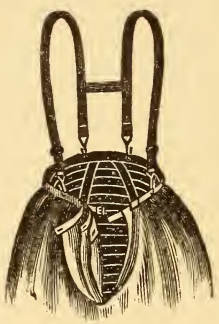
Morning sickness may sometimes be prevented if before getting up, while lying flat on her back in bed, the woman takes a hot drink of milk, broth, cocoa, chocolate, tea, or coffee, with or without toast, and remains in bed for half an hour afterwards before attempting to get up.

THE DRESS OF THE PREGNANT WOMAN.

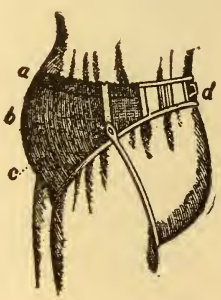
More so than at any other time the rules laid down in Chapter V on "Clothing" should be strictly observed during



Waist with buttons for supporting the skirts.



Skirt Supporter or suspenders.



Abdominal bandage.

pregnancy. Silk or wool must be worn next to the skin, the shirt having a high neck and long sleeves. The use of garters should be discountenanced. All compression about the waist must be avoided. The ordinary corset therefore must be discarded but in its place an hygienic waist or corset made

especially for pregnant women may be worn. Of these there are many upon the market, including the Ferris maternity waist, the Jenness-Miller waist and the Wade hygienic corset.

Heavy skirts and tight bands must be avoided. The skirts should be suspended from the shoulders by means of suspenders or a waist.

When the abdominal walls are weak the muscles become so overstretched that after labor they may fail to properly hold up the various organs, with resultant protuberant abdomen, filling of the stomach and intestines with gas, movability of the kidneys and dropping of the stomach and other viscera. These consequences are prevented and the abdominal muscles strengthened by the practicing before pregnancy of the exercises described in Chapter IV and by participation in various sports such as those mentioned in Chapter VII. The maternity waists and corsets just described will furnish some support to the abdomen. Great relief may be afforded by wearing a broad, properly adjusted abdominal bandage made of flannel, muslin or ribbed wool, or of silk and elastic.

High-heeled shoes are very injurious, as they throw forward the trunk, which already tends to fall in that direction, and cause the woman to bend back her head and shoulders to keep her balance, thus straining the muscles along the spine.

BATHING DURING PREGNANCY.

It is especially important during pregnancy to promote excretion by the skin. For this purpose frequent warm tub baths with an abundant use of soap are required. They are taken best at night just before retiring. For its general hygienic effect a cool sponge bath in the morning, such as described in Chapter II, is beneficial. Very hot and very

cold baths, foot-baths, and surf-bathing are dangerous during pregnancy.

WORK, EXERCISE AND REST DURING PREGNANCY.

Work.—A pregnant woman should reduce her work to below what she is accustomed to, and never allow herself to become fatigued. She must avoid jarring and straining. She cannot work on the sewing-machine, move heavy furniture, lift a heavy weight, reach to a shelf, or do violent sweeping.

Exercise.—Moderate daily exercise should be taken, at least during the early months. A woman may walk in the open air and sunlight or she may be driven in an easy carriage over smooth roads, but she must not handle the reins herself. General massage may be given, which, however, must not include the abdomen. Horseback-riding, bicycling, golf, tennis, dancing, swimming, and all similar forms of violent exercise are to be avoided. The woman should not take a sea-voyage while in this delicate condition, nor should she travel much.

Rest and Sleep.—The pregnant woman requires plenty of sleep. She should undress after the mid-day meal and lie down for an hour or so.

MATERNAL IMPRESSIONS.

In every bushel of chaff there can usually be found a grain of wheat. Similarly, despite the doubts cast by many physicians, there is an element of truth in the popular belief that strong impressions made on the mother during pregnancy leave their imprint on the child. Sudden emotions of grief, fear and anger often do have an influence on the developing fetus.

The pregnant woman, therefore, must be protected from disagreeable or heart-rending sights and associations, bad news, fright, and the like. She should lead a placid, quiet life

amid cheerful surroundings and with pleasant diversions, reading good books, looking at beautiful pictures, and listening to delightful music. She must not worry over her approaching confinement or study all about the various complications that occasionally are met with. Nor should she listen to gossiping neighbors or a thoughtless nurse recounting the difficulties of that process. Her mind should rest at ease with the knowledge that labor as a rule is a perfectly natural and normal process through which hundreds of women pass successfully every day, and that complications and accidents are of very rare occurrence.

How to Render Labor Easy.—A woman may also derive comfort from the thought that if she live according to the directions given in this book, especially those in regard to clothing and exercise, she will be more apt to have an easy and uncomplicated labor, followed by a normal convalescence.

If the woman become melancholy or show any signs, however slight, of a deranged mind, the physician must be informed of the fact.

More than at any other period of her life the wife during pregnancy requires the most thoughtful consideration of her husband.

CARE OF THE BREASTS DURING PREGNANCY.

The clothing should not be allowed to press upon the breasts. If the latter cause distress on account of their increasing size and weight, they should be supported according to one of the methods described in Chapter XXII on the management of the woman after labor. They should be washed daily with soap and warm water, any scales upon the nipples being removed.

Preparation of the Nipples.—When the nipples are flat or retracted they must be drawn out during the latter

months of pregnancy, so that they will develop into a shape that the baby can grasp. This may be done by gently pulling them out from the breast with the thumb and index finger every night and morning, or by the use of the breast pump, or by covering them with a nipple protector or a nipple shield.

The nipples will be rendered less sensitive and less liable to fissures if, during the last month of pregnancy, they are washed every morning with cold water and then anointed with a mixture containing equal parts of water and glycerole of tannin, applied with a piece of absorbent cotton.

CARE OF EXCRETIONS AND DISCHARGES.

The Urine.—The urine in its relation to pregnancy is thoroughly discussed in Chapter XIX.

The Bowels.—The various methods of relieving constipation mentioned in Chapter XXXIII should be employed when that condition occurs during pregnancy.

Leucorrhea.—A white, mucous discharge sometimes occurs from the vagina during pregnancy, and is treated according to the directions given in Chapter XXXIII.

MARITAL RELATIONS DURING PREGNANCY.

The marital relations need not necessarily be suspended throughout pregnancy, except during the early and late months, when they must cease on account of the liability to abortion at these times. Moderation, however, must always be strictly observed. Continence sometimes is recommended, and is imperative if the woman have a tendency to abort. During the days corresponding with the usual menstrual period intercourse must always be avoided.

CHAPTER XVIII.

THE MENOPAUSE—"CHANGE OF LIFE."

Age at which "change of life" occurs. Method of oncoming. Symptoms of the menopause: Headache, flushes of heat, derangement of the digestive and nervous systems. A mistake to attribute all symptoms at middle-life to the menopause. The physiology of the menopause. Importance of familiarity with the normal phenomena. The recognition of danger signals. Hygiene of the menopause.

"Old age comes on apace to ravage all the clime."
—*Beattie.*

THE period during which a woman experiences the monthly sickness lasts on the average from thirty to thirty-two years. The final cessation of menstruation is spoken of as the menopause, climacteric, or "change of life."

AGE AT WHICH THE MENOPAUSE OCCURS.

In this country the menopause occurs, as a rule, between the ages of forty and fifty, usually about the forty-sixth year. The age depends upon various conditions. When menstruation begins early it usually ends late, and when it begins late, ends early. The menopause may appear prematurely in very fat women, in those suffering from consumption, Bright's disease, and diabetes, and in women who have borne a large number of children in rapid succession and have suckled them. It may be retarded in the presence of disease of the womb, tubes or ovaries, especially when there is a fibroid tumor of the uterus. "Change of life" appears later in the northern part of Europe than in the southern, in England than in America, in country

women than in city women, and among the idle and well-to-do than among the laboring classes.

METHOD OF ONCOMING.

The menopause occurs in a variety of ways. In the majority of cases the amount of blood passed at each monthly period becomes gradually diminished until it ceases altogether. In other instances the menstrual flow stops abruptly and permanently. Sometimes one or more periods are skipped, after which the flow again occurs, perhaps with a lessened amount, followed by more irregularity and then by the final cessation.

SYMPTOMS OF THE MENOPAUSE.

If the woman's general health is good and if there is no disease of any kind, the menopause may be ushered in with no more symptoms than those already noted. No marked general disturbance is present in such a case. Many women, however, suffer from very annoying conditions for one or two years. *Headache* is a common symptom. *"Flushes of heat"* may occur frequently throughout the day, sometimes as often as several times within an hour. They consist of a feeling of heat over the whole body or over a part, followed by sweating and a cold, chilly sensation. The *digestive apparatus* often gets out of order. Large accumulations of *fat* may develop. There is a marked derangement of the *nervous system* at this period, affecting even the mental condition. The woman may exhibit slight vagaries, a loss of interest in the daily affairs of life, and in extreme cases even melancholia and other forms of insanity.

A Mistake to Attribute All Symptoms at Middle Life to the Menopause.—It is a great mistake, however, to ascribe all disturbances occurring at this time to "change

of life." Many serious conditions have been overlooked by such superficial observation. Every symptom complained of should be investigated just as thoroughly as at any other age.

THE PHYSIOLOGY OF THE MENOPAUSE.

All the organs of generation become smaller at the climacteric and gradually cease to functionate. Many of the disagreeable sensations experienced at this period are due to the absence in the blood of the product secreted by the ovaries. Shrinking occurs in external as well as internal organs, as shown by the wasting of the breasts.

Importance of Familiarity with the Normal Phenomena.—Owing to her ignorance as to what constitutes the normal occurrences to be expected at the menopause, a woman is unable to recognize dangerous symptoms when they appear. Every year many women lose their lives in consequence of this ignorance. They view the danger signals with complacency, regarding the warnings as part of the normal phenomena of the climacteric. It is, therefore, most important for every woman who has reached her fortieth year to acquaint herself with the normal symptoms that accompany "change of life" and to be able to recognize the symptoms of disease that frequently occur at the same time.

THE RECOGNITION OF DANGER SIGNALS.

When diseased conditions are present, Nature gives certain warnings which must be regarded if the disease is to be checked in time. The following phenomena are not normal: (1) Profuse bleeding at the time of the menopause; (2) Slight bleeding occurring oftener than once in four weeks; (3) The apparent reappearance of menstruation, or of slight irregular hemorrhages, after the meno-

pause has been established and menstruation has been absent perhaps for many months.

Such symptoms should always be viewed with alarm. When they occur, a woman should immediately consult her physician. Any bleeding from the vagina in a woman who has passed the menopause should arouse the gravest suspicion. As a rule, it is usually caused by a diseased condition, usually by a tumor of some sort. If the tumor be a fungous growth, a polyp, or a fibroid, the condition may not be so serious as if it be a cancer. In the latter instance delay in seeking medical advice usually means death, while promptness may result in a cure. Penrose says of cancer of the cervix that "in the early stages the disease may be eradicated with every probability of a permanent cure," but that "the great majority of women come to the operator when the disease has extended too far to permit any radical treatment."

HYGIENE OF THE MENOPAUSE.

When entering upon the "change of life," a woman should carefully observe the rules of hygiene laid down in the first part of this book. It is most important that the general bodily health be maintained. Frequent warm baths are required to keep the skin acting well. The diet should be simple and unirritating. Meats should be restricted. An increase in the amount of vegetables eaten is advisable. Sugar is apt to set up a fermentation in the stomach; consequently sweet dishes, such as cakes, candies, preserves, jellies and sweet puddings must be taken in moderation, and when indigestion is present avoided altogether. The woman will also have to refrain from eating pastry, hot breads, fried food and rich dishes. She should drink water freely, taking three pints a day if possible. Stimulants are to be avoided; alcohol in any form is prohibited. The bowels are to be kept

open, by suitable food and exercise or by purgatives or laxatives when required. An outdoor life is of advantage, gentle exercise in the open air being essential. Massage is beneficial, especially to those who for any reason are unable to take active exercise. It may be given twice a week by a skillful masseuse.

The Turkish bath is an excellent form of exercise, combining the effects of massage and of the hot bath. It is particularly useful at this period in distributing the blood throughout the body and in aiding the skin in getting rid of waste matters. It must not be taken, however, without the physician's permission or advice.

The nervous system also demands attention. Domestic burdens should be lightened and the woman should be relieved of worry and responsibility as much as possible, but she must not be left without congenial occupation. Some form of amusement should be provided. A change of locality and surroundings is sometimes demanded. In certain cases it may be necessary to resort to the rest-cure.

Pruritis or itching should be treated as described in Chapter XXXIII.

PART III.

CHILD-BIRTH.

CHAPTER XIX.

PREPARATIONS FOR THE CONFINEMENT.

Have the best, if possible; if not, have the best possible under the circumstances. The lying-in room. Arrangement of the bed. Things needed for the confinement: Absorbent pads, Occlusive bandages or napkins, The abdominal binder, The baby's basket, The baby's clothes, etc. Preparation of the patient. Engaging the physician and nurse. The accoucheur: physician vs. midwife. The nurse: Trained nurse vs. monthly nurse. Selection of a nurse; her duties.

"The readiness is all."—*Shakespeare.*

IN preparing for the confinement, one should know what is best to do and, if possible, put that knowledge into practice. But, unfortunately, a woman is not always able to do as she wishes. The best is oftentimes unattainable, in which case the best under the circumstances must suffice. Whenever possible the directions given in this chapter should be implicitly followed; they are simple and necessary. However, persons who for any reason are unable to adopt the first and best suggestions made may be able to carry out the simpler methods also given, which, though less desirable, are yet serviceable and good.

THE LYING-IN ROOM.

The room usually selected for the confinement is the prospective mother's own bed-room. It ought to be large and sunny, well lighted, well ventilated and properly heated. A communicating room for the nurse is a great convenience, leaving the mother the exclusive use of her own. Matters are also made easier if the bath-room be

near. All unnecessary furniture, heavy curtains, and all bric-a-brac should be removed. If a carpet is on the floor it may be taken up, or the portion about the bed may be protected by a large rubber mackintosh, or oilcloth, or by several layers of newspaper. A rug should be removed. It is well to take out of the room anything that might collect dust, which often is a carrier of disease germs.

The Arrangement of the Bed.—The *bed* should preferably be narrow and high and placed where it will be out of draughts. As it must be accessible from both sides, it should not be placed with its side against the wall. The mattress should be firm; hair is the best material. To prevent its sagging in the middle, three table boards, or shelves from a book-case, may be placed in the middle of the bed between the mattress and the spring.

When the bed is arranged for the labor, draw-sheets of rubber and cotton are sometimes placed across the middle of the bed over the under sheet. This is known as the *permanent bed,* but, though convenient and elegant, is often dispensed with. Over the "permanent bed," when it is used, otherwise over the mattress, are placed a second rubber draw-sheet and a second cotton draw-sheet, sometimes folded once. These constitute the *temporary bed,* which is removed immediately after delivery.

If the bedstead is double, instead of single, the temporary bed is arranged at the side where the patient is to lie, being securely fastened with large safety pins. Instead of the rubber sheet, a piece of mackintosh may be substituted, or a piece of oilcloth that has been thoroughly scoured. When these are not to be had, use may be made of an old clean comfortable or of clean wrapping paper or even of clean newspapers.

On the spot where the hips will lie is pinned an *absorbent pad,* which, as soon as soiled, is to be taken off and

burned, to be replaced by a clean one. Consequently several must be provided. They are best made of nursery cloth, consisting of two layers of muslin, each one yard square, with a layer of absorbent cotton, wood wool, jute, bran or sawdust, two to four inches thick, loosely quilted between them. They can be made at home or bought in the shops. They must be baked in the oven, or boiled for half an hour in a clothes boiler and thoroughly dried, then pinned up in a sheet and put away out of the dust. If towels or napkins or old pieces of muslin are used, they must be prepared in the same manner.

It is well to have two sets of *coverings,* one for use during labor, and one to put on after the delivery.

THINGS NEEDED FOR THE CONFINEMENT.

The Occlusive Bandages or Napkins.—These are best made of carbolized gauze and salicylated cotton, which, however, are rather expensive. A cheaper dressing is made out of rolled absorbent cotton, or wood wool, and washed cheese cloth. Two thicknesses of the cotton, seven or eight inches long and four or five inches wide, are enclosed in a quarter yard of the gauze or cheese cloth and so folded as to make a pad (sixteen or eighteen inches long and four or five inches wide), the edges being stitched.

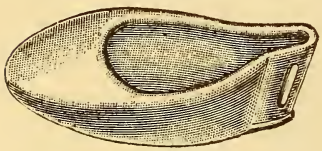
Sometimes old pieces of muslin or other material, which have been boiled, are used. Three or four dozen will be required. The hands that make them must be scrupulously clean. When made beforehand they should be put into a clean pillow case, or wrapped in a sheet, and thus boiled, steamed or baked. They then should be kept covered and put away in a clean place, free from dust.

The abdominal bandage or binder is made of washed, unbleached muslin, about a yard and a quarter long and about half a yard wide. Sometimes it is made only long

enough to go around the abdomen once, in which case it is furnished with buttons and buttonholes in front and laces at the sides. It must be firm to give the stretched muscles support, but care must be taken not to have it fastened tighter above than below.

Other Articles Required.—There should also be in the lying-in room a *table,* a *chair,* two *basins* and a *bucket.*

The woman should have the following articles on hand, ready for the confinement. The absolutely necessary things are given in italics; the full list can only be obtained by the well-to-do. *Hand towels,* ether (one-half pound), brandy (two ounces), vinegar (four ounces), tincture of green soap (four ounces) or *a new cake of pure soap, antiseptic tablets of corrosive sublimate* (one bottle), a large, coarse, new sponge; *a skein of bobbin* (sterilized), *a fountain syringe, a bed-pan,* a new soft rubber catheter, *absorbent cotton* (a small package), salicylated cotton (a one-pound package), carbolized gauze (five yards), nursery cloth (eight yards), *unbleached muslin* (two yards), *large safety pins, carbolated vaseline* (a one-ounce bottle), *fluid extract of ergot* (one ounce), *a pair of scissors* to cut the cord.



BED-PAN.

As soon as the labor has begun, three pitchers should be filled with water that has been boiled for half an hour and clean towels should then be tied over their tops. This is the only water to be used about the patient.

THE BABY'S BASKET.

The baby itself must not be forgotten. A basket for the baby's things must be purchased or made at home. The cheapest arrangement is to buy an ordinary wicker hamper or shallow basket and a camp stool. The basket is attached

firmly to the camp stool, lined with muslin and trimmed with silk, lace and ribbon or other suitable material, with a pocket at each corner. The frill from the basket covers the place where it joins the camp stool. The basket should contain large and small safety pins, a bath thermometer, talcum powder, a fine, soft sponge, a soft hair brush, castile soap, cold cream, alcohol for rubbing, blunt scissors for the nails, six wash-cloths of Shaker flannel, six inches square, old linen for cleansing the mouth, and a bath blanket.

THE BABY'S CLOTHES.

The following list of clothes will be required for the baby. In stating the number needed, two figures are given, the least number one can get along with and the number one ought to have. A mother may be able to economize still further by washing frequently and thus using the same garment again: Four to six flannel or knit bands or binders; three to six dozen diapers; four to six pairs of knitted woolen socks; three to four woolen shirts; four flannel night-skirts; four flannel day-skirts; four to six white day-skirts; six to ten slips; six to ten dresses; material for four or five flannel bands; a soft pillow, fourteen by eighteen inches; soft pillow covers; knit wrapping blankets; sacques, wrappers, bibs, caps, blankets, veils, and so forth.

The way these clothes are to be made is described in Chapter XXVII on "Clothing for the Infant and the Child."

Other Conveniences for the Nursery.—Several other articles will be needed for the baby. They are:

A *bath-tub* and two flannel *bath aprons.**

Six old, soft damask *towels.* Bathing towels made from diaper cloth will answer when the damask ones are unobtainable. They should be repeatedly scrubbed and boiled to be rendered soft.

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* Described in Chapter XXVI on "Bathing the Baby."

A small-sized *clothes bars* or clothes horse. This will be used for airing the baby's clothes and holding its towels.

A *low chair* without arms. This is for the nurse to sit on when washing the baby.

A *screen.* It should have a firm, square frame, solidly covered with cretonne, burlap or denim, so that it will afford real protection from draughts or light. A bamboo screen with curtains hung on rods will not answer.

PREPARATION OF THE PATIENT.

When the time for confinement approaches, a woman should keep her *bowels loose,* by means of laxatives if necessary. As soon as she begins to experience the pains she should be given a *rectal enema* containing a pint of soapsuds and a teaspoonful of turpentine. She should take a *warm general bath* and should wash the external genitals thoroughly with soap and warm water. She should not take a *vaginal douche* unless she is subject to a contagious discharge, or unless she has been so instructed by the doctor.

ENGAGING THE PHYSICIAN AND NURSE.

The Accoucheur.—As soon as pregnancy is suspected, the *physician* should be engaged. He should have general supervision over the life of the woman, her diet, clothing, exercise, and so forth, during the whole period between conception and labor.

Pregnancy, although usually a normal process, is subject to various complications, for whose recognition and treatment a physician is required. The kidneys, in particular, need constant watching, as they frequently become affected during this period. A four-ounce specimen of mixed night and morning urine should be sent to the physician for examination every two weeks until the last

EXERCISES FOR DEVELOPING THE FIGURE.

1. *Forward drop in a narrow doorway.* 2. *Breathing exercises combined with arm movements.* 3. *Arm exercises.* 4. *Bending to the side.* 5. *Bending backward.* 6. *Bending forward.*

month, when it should be sent every week. A statement of the exact amount of urine passed during the twenty-four hours should accompany the specimen.

When such symptoms as scanty urination, severe headache, dizziness, or swelling of the feet or face occur, they should be reported to the physician at once.

A *midwife,* in the opinion of the writer, is not desirable, except in those cases where it is impossible to secure the services of a physician or a medical student. The midwife rarely understands the meaning of surgical cleanliness, which is the most important factor in preventing infection or blood-poisoning. She, moreover, is unable to meet the various complications as they arise, but always must send out for a doctor, who often arrives too late. Promptness at such a time in recognizing and meeting a serious condition is all-important.

The Nurse.—A woman must choose between a trained nurse and the so-called monthly nurse.

A *trained nurse* or graduate nurse, one who has completed a course of training in a hospital, should be procured if she can be afforded. Such a person not only has the requisite knowledge as well as experience, but she has learned how to obey the orders of the physician.

The *monthly nurse,* on the other hand, has not had careful hospital training, being merely a woman who makes a practice of nursing maternity cases for thirty days. Nevertheless she often has acquired skill and experience with constant practice. Some monthly nurses, indeed, are very capable, and many are adaptable and able to carry out the doctor's orders in an intelligent manner. Frequently, however, they are filled with wrong ideas and queer, old-fashioned notions about the care both of mother and baby. Oftentimes they feel their experience to be of such great importance that they pay no attention to the advice or orders

of the physician; they regard the care of the patients as their own particular business rather than the doctor's. In consequence, the monthly nurse is often directly responsible for much injury to mother and child. Still she is always a great help in the absence of any one better, and she is all the majority of women are able to afford.

The selection of a nurse should receive careful consideration. The woman must be known to be competent. It is not safe to employ a woman who is not known. Often the physician is able to recommend some one in whom he has confidence. In addition to ability, the nurse must have certain favorable personal qualities. She must be able to adapt herself to circumstances, to improvise when she cannot procure the object she requires. She also must possess tact, so as to get along with the family and the servants. Honesty and honor are two necessary traits: the first, because the nurse sometimes is almost in charge of the house and always has access to every part; the second, because there is no family secret kept from the nurse, no skeleton she does not see.

The duties of the nurse comprise everything that has to do with the care of both patients. She tends to the mother, washes her, arranges her meals, and so on, and at the same time takes charge of the baby, bathing it and caring for it in every way.

The nurse, ordinarily, does not perform any work outside of her own particular duties. She is not expected to wash the baby's clothes, with the exception of the diapers and flannels, nor wash her own garments, nor do the general cooking or sewing or cleaning. She may do all these, however, if she be so disposed, or if she be engaged with that understanding. The patient's meals, however, she is supposed to prepare. Where no servants are kept, the monthly nurse often prepares the meals for the family, and

when not engaged in caring for her patients may tend to some of the other household duties.

The nurse must be properly cared for, in order that she maintain her own health as well as keep at the highest point of efficiency. Provision should be made for her obtaining sufficient sleep and getting some outdoor exercise every day. It is in relieving the nurse at such times that solicitous relatives can be of most service.

The nurse should be *engaged* several months before the expected confinement. At this time all arrangements about the work to be done and the compensation to be received should be definitely settled.

As the day for the confinement approaches, the nurse should be within reach, and a few days beforehand, especially if the patient has already borne children, she should go to the house and remain there until after the confinement. She should, of course, be able to recognize the signs of labor and to know when to send for the physician. As soon as the process has begun she should arrange the bed and prepare the patient.

A STUDY IN PENSIVENESS.

These exquisite heads, with their soft contours and delicate coloring, are a marvel of beauty. The faces by the magic of the artist's brush bespeak rare kindliness, sanctity and loveliness.

CHAPTER XX.

THE PHYSIOLOGY OF CHILD-BIRTH.

Causes of labor. How to calculate the day of confinement. The duration of pregnancy. Methods of calculation. Importance of knowing the date of the last menstruation. Child-birth: The first stage of labor; the second stage; the third stage. The Puerperium. The lochia's amount and odor. The danger signals. Afterpains. Changes in the breasts.

"A mother is a mother still,
The holiest thing alive."

—*Coleridge.*

AS has been told in previous chapters,* when the pollen from the stamens of the apple blossom falls upon the pistil and is carried to the ovary, it fertilizes the ovule that lies within. The ovary thereupon grows bigger and bigger, developing into the fruit which contains the seeds from which are to spring new apple trees. As the apple becomes fully ripened, certain degenerative changes occur in the stem supporting it, which makes its connection with the parent branch so frail as to be easily broken. A breath of wind will cause it to fall to the ground.

The phenomena that occur in animals are much similar. As the ovum which contains the unborn offspring reaches full maturity it becomes separated more or less from the wall of the uterus by means of a degenerative process and is finally expelled, in human beings at the end of about forty weeks.

Causes of Labor.—Every four weeks, as has been shown,† the womb has a tendency to contract. In the non-

* See Chapters VIII and XV.
† See Chapter X.

pregnant uterus this results in the expulsion, in the form of the menstrual flow, of the blood that has accumulated there. During the development of the child this monthly contraction is hardly noticed until the end of the tenth lunar month, when the separation between the ovum and the womb is complete. By this time the distension of the uterus has become so great that the slightest additional impulse stimulates it to contraction.

When a ship is ready to be launched, a single blow from a hammer will start it down the ways. So with the uterus when at the end of two hundred and eighty days it has been overstretched with a ripened ovum, the occurrence of the monthly contraction—or a little extra exercise, or a dose of purgative medicine, or a jolt, or a jar—will be sufficient to stimulate it to expel its contents. In this manner pregnancy is terminated by the birth of the child.

HOW TO CALCULATE THE DATE OF CONFINEMENT.

It is important for a woman to be able to estimate with some degree of accuracy on what day she will be confined. All her preparations are made in accordance with this calculation. The nurse is engaged for a certain date. The physician arranges his work so as to be ready for a call at the expected time. Not only is much unnecessary trouble and annoyance given to mother, doctor and nurse by lack of accuracy in calculating the date of the confinement, but the baby may come at a time when no preparations have been made for its reception.

THE DURATION OF PREGNANCY.

Confinement is said to occur about two hundred and seventy-one days from the date of conception. As it is impossible to determine accurately just when conception occurs, it is customary to make the calculations from

the menstrual period immediately preceding conception. Labor may usually be expected to begin two hundred and eighty days after the first day of the last menstruation. Pregnancy, therefore, lasts about forty weeks, or ten lunar months of twenty-eight days each, or a little over nine calendar months. It is thus seen that labor comes on at the tenth menstrual period from the beginning of pregnancy.

METHODS OF CALCULATION.

A very common way of calculating the date on which confinement may be expected is to start with the first day of the last menstruation, count backwards three months, and then add seven days. For example, if the first day of the last menstruation was on May 10th, counting three months backward would bring it to February 10th, and adding seven days would make February 17th the date on which confinement may be expected. This method will give only an approximate result, inasmuch as months are not of equal length. This difficulty is overcome by adding six days in April and September, five days in December and January and four days in February.

Various tables have been compiled to make the computing more accurate as well as simpler and easier. One commonly used is given on the following page. This table is divided by horizontal lines into twelve parts, one for every month in the year. In each compartment are two rows of figures, the upper one being the days of the month in their regular order. To determine the probable day of confinement, find in this upper row the date of the first day of the last menstrual period; the figure immediately below it is the day of the month on which labor may be expected, the month itself being designated in the margin. For instance, if the last menstrual flow began on March 9th, the woman will probably be confined on December 14th.

TABLE FOR CALCULATING THE DATE OF CONFINEMENT.

JAN.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
OCT.	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	NOV.
FEB.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28				
NOV.	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5				DEC.
MAR.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
DEC.	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	JAN.
APRIL	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
JAN.	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4		FEB.
MAY.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
FEB.	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	1	2	3	4	5	6	7	MAR.
JUNE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
MAR.	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6		APRIL
JULY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
APRIL	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	MAY
AUG.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
MAY	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	JUNE
SEPT.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
JUNE	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7		JULY
OCT.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
JULY	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	AUG.
NOV.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30		
AUG.	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6		SEPT.
DEC.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
SEPT.	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	OCT.

Directions for Using the Chart.—Find the date of the first day of the last menstruation in the upper row; the figure beneath it is the day of the month in the margin at which labor will probably begin.

THE BABY'S TOILET.

This is a glimpse of a tidy home in a foreign land where the mother is giving baby its bath. See the directions for the American mothers to follow.

In these methods of reckoning, the date obtained must be regarded only as an approximate one. Labor may occur within the week preceding or the week following that date. It is the exception rather than the rule for labor to occur exactly in two hundred and eighty days. This figure is based on the supposition that menstruation occurs every twenty-eight days.

Probably the very best way to estimate the duration of pregnancy is to ascertain the number of days between the last normal monthly period and the one preceding it, and multiply this number by ten.

As the time of confinement is calculated from the first day of the last menstruation, it is most important for the woman to know just when this flow occurred. Many women, especially those about to be confined for the first time, fail to remember the exact date, thereby causing much worry and annoyance to themselves, to their family, and to the physician.

The physician is able to estimate the duration of pregnancy by noting the position of the womb.*

CHILD-BIRTH OR LABOR.

Labor is that natural process by which a woman expels from her uterus and vagina the matured ovum. This ovum, at the end of two hundred and eighty days, consists of the fully developed child, surrounded by the membranes, at one end of which is the placenta.

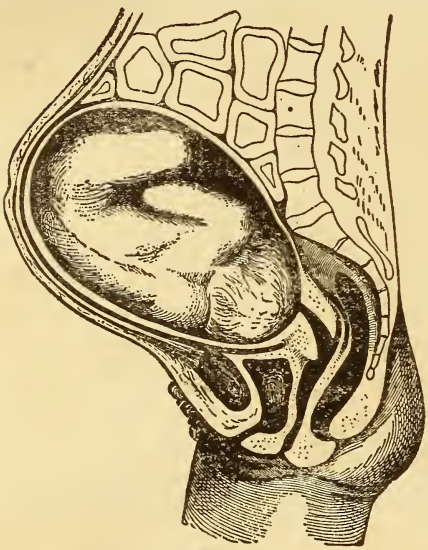
THE THREE STAGES OF LABOR.

Labor is divided into three stages. During the first stage the birth-canal expands until it is of a sufficient size to allow the child to pass through. The second act consists in the expulsion of the child. In the last stage the

* See illustration in Chapter XV.

remainder of the ovum—the membranes and the placenta—is delivered.

Before labor begins, the child usually lies head downward in a sack filled with water, the walls of the sack being formed by the membranes, which are everywhere in contact with the inner surface of the womb. The water contained in the sack and surrounding the child is called the *liquor amnii,* familiarly spoken of as "the waters."



BEGINNING OF LABOR.

This is before the birth canal has become dilated. The thick cervix or neck of the womb is shown, opening at right angles into the long vagina. In front of the vagina is the bladder; behind, the rectum.

At the upper part of the uterus, between it and the membranes, is the *placenta,* which connects the large blood-vessels of the mother with the vessels in the umbilical cord.

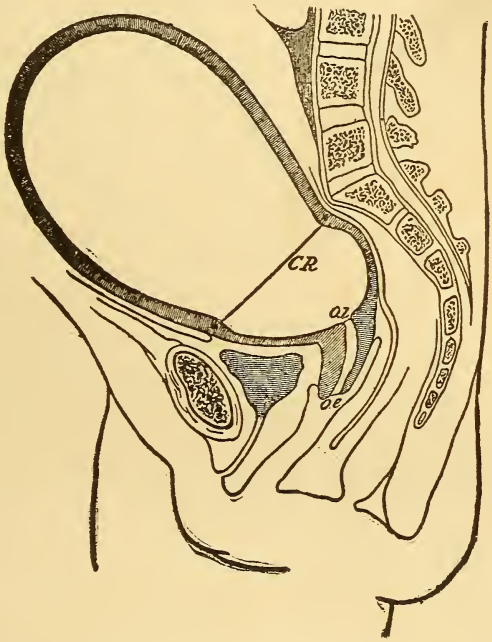
Before labor begins the lower part of the womb is narrow, the neck is stopped up with a large plug of tenaceous mucus, and the internal mouth or os is tightly closed.

THE FIRST STAGE OF LABOR.

Labor begins with a series of contractions of the womb, lasting about a minute, and re-occurring at intervals of from five minutes to half an hour at first, usually of about fifteen minutes. The intervals decrease as labor progresses, finally being reduced to only two or three minutes.

The contractions drive the waters down through the in-

ternal mouth into the neck of the uterus, where, covered only by the thin membranes, they dilate the neck and the internal mouth easily and gently. As with repeated contractions the womb becomes smaller and smaller, the head of the child is driven down in the same direction as the bag of waters and further distends the lower part of the uterus and its neck, until at last the neck has been stretched so wide as to be completely obliterated. The same force then proceeds to dilate the outer mouth, or external os, until the latter is big enough to let the head through.

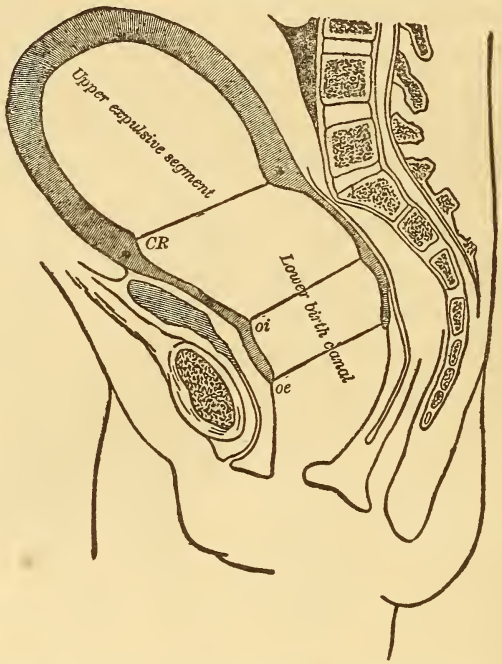


THE UTERUS OR WOMB AT THE BEGINNING OF THE FIRST STAGE OF LABOR, BEFORE THE PARTS HAVE BEEN DILATED.

o.i.—Os internus or internal mouth. *o.e.*—Os externus or external mouth. Between *o.i.* and *o.e.* lies the cervical canal.

Just as this occurs, the membranes bulging in front usually rupture, allowing the waters to escape. Sometimes the membranes are so tough that they have to be punctured.

When the child is born with the unbroken membranes around it, it is said to be born with a caul. In some cases the membranes rupture early, causing what is known as a dry labor. With the full dilatation of the external os, the first stage ends and the second begins.



THE UTERUS OR WOMB AT THE END OF THE FIRST STAGE, AFTER THE PARTS HAVE BEEN DILATED.

oi—Internal mouth or os. *oe*—External mouth or os. *oi* to *oe*—Cervical canal.

THE SECOND STAGE OF LABOR.

During the second stage of labor the head descends through the vagina, advancing slowly and stretching all the tissues before it. Now, not only does the uterus contract, but the abdominal muscles also are brought into play and help to drive the child downward through the birth-canal. The moulding and stretching of the parts to fit the child usually takes about an hour and a half or two hours.

At the end of this time the whole birth-canal will have

been fully dilated. The vulva, or external opening, then begins to distend, and when the aperture is sufficiently large, the head passes through, followed shortly after by the rest of the body. With the birth of the child the second stage ends.

THE THIRD STAGE OF LABOR.

After the expulsion of the child the uterus continues to get smaller. As the uterus contracts the placenta becomes detached from it and lies within the womb until, with further contractions, it is finally driven out into the distended cervix or into the vagina, with the membranes attached to it and trailing after it.

Having expelled the placenta, the uterus contracts until its cavity is obliterated. It then remains firmly contracted, squeezing the ends of the blood-vessels that were broken when the placenta was torn loose, and thus preventing hemorrhage. Labor itself terminates with the expulsion of the placenta or after birth.

THE PUERPERIUM.

The period immediately following the delivery of the child and the after-birth, comprising the time consumed by the uterus in regaining its natural size, is spoken of as the puerperal state, or the puerperium, or the lying-in period. In a normal case it lasts six weeks.

The process by which the womb becomes reduced directly after labor to the size of the healthy, non-pregnant organ is called technically "the involution of the uterus." It is brought about in two ways. The tissues of the womb shrink, while part of them becomes converted into fat and is expelled with the discharges.

The Lochia.—This discharge, which always occurs after labor and is called the lochia, consists of blood, degenerating tissue, and the normal secretion of the parts. For the first

five days it is red in color, from which it takes the name of lochia rubra, or red discharge. During the next two days it is yellow and is called lochia serosa. It then assumes a whitish color and is known as lochia alba. This last stage lasts until the seventh to the fourteenth day, or even longer.

The *amount* of the discharge is conveniently estimated by noting the number of napkins or pads soiled in the twenty-four hours. These pads for the first four or five days should not normally have to be changed oftener than six times in the twenty-four hours.

The *odor* of the discharge is an index as to the condition of the patient. It should resemble that of fresh blood or raw meat while the discharge is red, but thereafter it should be that peculiar to these parts.

When decomposition occurs the odor becomes putrid. This is an important *danger signal.* When it occurs the physician must be notified at once; the woman's life may be in peril.

AFTER-PAINS.

For several days after labor in women who have already borne children the muscle of the uterus relaxes a little at times. This loosens the hold on the broken blood-vessels and permits them to bleed slightly. The blood that oozes out in this manner collects in the uterine cavity where it forms clots of considerable size. These clots act as an irritant to the womb, exciting it to active contractions in an effort to expel them. The contractions of the uterus cause pains or cramps, which are known as after-pains. They continue until the clots are expelled.

DIFFICULTY OF URINATION.

The muscles of the abdomen are so worn out and strained after labor that sometimes for several hours or days they cannot act in emptying the bladder, which organ

consequently becomes distended and must sometimes be relieved by means of a catheter. This may be used only by a physician or graduate nurse, and only after the failure of the various expedients to induce the voiding of urine voluntarily, described in Chapter XXII on "The Care of the Mother After Labor."

CHANGES IN THE BREASTS.

During the latter part of pregnancy a thin, glistening fluid, called colostrum, is found in the breasts, from which it may be squeezed out. Directly after labor it is increased in quantity and becomes a little whiter and more opaque. At the end of about forty-eight hours the breasts undergo a decided change; they suddenly enlarge and may become very tense. Sometimes they are painful and tender on pressure, and impart a hard and lumpy sensation to the touch. The veins under the skin enlarge and show very distinctly. Instead of colostrum, the breasts now contain normal human milk, which is described in detail in Chapter XXIV on "Breast Feeding."

The management of the mother, both during and after labor, is given in the following chapters.

CHAPTER XXI.

THE MANAGEMENT OF LABOR.

The knowledge required to make a woman helpful in the lying-in room. The Diagnosis of Labor: "Dropping," labor pains, the show. Duration of labor. Surgical Cleanliness the Guiding Factor Throughout the Labor; A talk on germs; How the birth canal becomes infected; Puerperal infection can always be prevented; How to prevent puerperal infection. The Management of the First Stage of Labor: Diet during the first stage; The administration of an anesthetic. The Management of the Second Stage of Labor. Care of the New-born Infant: Care of a premature infant; Treatment of an asphyxiated baby. Care of the Mother During the Third Stage of Labor.

"The hour arrives, the moment wish'd and fear'd;
The Child is born, by many a pang endear'd.
And now the Mother's ear has caught his cry;
Oh, grant the Cherub to her asking eye!
He comes—she clasps him. To her bosom press'd,
He drinks the balm of life, and drops to rest."

—Rogers.

IT is not the author's purpose in this chapter to write a treatise on obstetrics. Nor is it his intention to so instruct a woman that she will be qualified to assume full charge of a labor. It must not be supposed that with a few minutes' reading a person can become proficient in what requires years of study and practice to acquire. The delivery of the child, known also as child-birth, labor, obstetrics, parturition, midwifery and tokology, is too serious a procedure to be entrusted to any but the most skillful hands. A

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THE BRIDE.

All the world loves a lover and stops to do homage to the lovely bride, whether she appears in the simple homemade gown, or the more elaborate bridal gown, amid palms and flowers.

physician should be engaged whenever possible; next in order of proficiency come the medical student and the midwife.

In assisting the physician, however, a woman can be of great service, especially if she is familiar with the work required of her. The present chapter will be devoted to instructing a woman in the requisite knowledge that will make her presence valuable in the lying-in room.

Before the date of the expected confinement, which is to be calculated according to one of the methods given, the preparations for it mentioned in chapter XIX must be made. The occlusive bandages, the abdominal binder and the other articles required, including the baby's clothes and the baby's basket, should be in readiness.

THE DIAGNOSIS OF LABOR.

It is important for a woman to be able to recognize when she is in labor, in order, on the one hand, to summon the physician in time, and on the other to avoid ludicrous mistakes.

"Dropping."—A valuable premonitory sign is the "dropping" or sinking of the child's head in the pelvis, which is associated with a flattening of the upper part of the abdomen and a greater prominence of the lower portion. This may occur over night at the beginning of the last month of pregnancy in women who have never borne children, and two weeks or less before labor in a woman who is already a mother.

Labor Pains.—The sign that labor has actually begun is the occurrence of labor pains. These are of a characteristic duration, situation and nature. They last but a minute and are separated by intervals of from five minutes to half an hour, being usually about fifteen minutes apart. The pain is felt in the abdomen or in the back, or it may seem to pass from the navel to the spine.

The Show.—As the neck of the womb stretches, there is

a slight oozing of blood which stains the large plug of mucus that fills the cervical canal. With the further dilation of the neck or cervix this blood-stained plug of mucus is expelled, when it is known as the "show."

DURATION OF LABOR.

It would be a most desirable thing if one were able to estimate just how long a labor will last. This, however, cannot be done with any degree of accuracy. The duration may vary from one hour or less to many hours, and in rare instances to a week or more. Women who have already borne children are in labor on an average about eight hours; those having their first baby must expect to be confined double that time or longer. The probable length of time may often be judged from the history of a woman's previous labors. The author believes that the process will be much shortened in a strong, healthy woman who has lived hygienically and has taken plenty of exercise, especially if she has practiced those movements that strengthen the abdominal muscles.

SURGICAL CLEANLINESS THE GUIDING FACTOR THROUGHOUT LABOR.

A Talk on Germs.—Disease germs or bacteria are very minute; thousands could be present on the head of a pin without being seen with the naked eye. These microscopic organisms multiply with great rapidity; in the course of several hours two or three individuals can increase to billions. Whenever disease germs get inside the body they manufacture a poison which may produce disease and even cause death. While dangerous wherever found, they are especially so in certain localities, such as the interior of the womb and of the abdomen, in the latter place giving rise to peritonitis.

The introduction of a disease germ into the body is called

infection. The presence of such a germ in the body is known as sepsis. Any article that has a germ on it is said to be infected or septic. By disinfecting or sterilizing an object we remove all germs from it and render it aseptic, sterile or surgically clean. There is consequently an important difference between ordinary cleanliness and surgical cleanliness. The former signifies that all dirt has been removed; the latter that all germs as well as dirt are absent.

How the Birth Canal Becomes Infected.—Disease germs are never normally present in any of a woman's organs of generation. They must come from without. When present in any part of the birth canal they have as a rule been introduced by the finger or hand, by an implement or instrument, or by the water. They can, however, themselves effect an entrance if deposited upon the external parts by one of the agents mentioned or by the bed linen, the body clothing, the mattress, the vulvar pads or by the material used to wash the vulva or external parts (rags, cloths, sponges, cotton, etc.). As soon as any germs have been introduced into the birth canal they are liable to multiply and cause both a local inflammation and a poisoning of the whole system. Such a condition occurring after labor is known to physicians as puerperal infection, puerperal sepsis or puerperal fever, and more popularly as childbed fever or blood poisoning.

At any time other than during labor or shortly after it, the introduction of germs into the vagina is not attended with such serious results, because the cervix or neck of the womb is usually tightly closed and shuts off the germs from the parts above. But during the period from the beginning of labor, when the cervix begins to dilate, to the end of the puerperium, when it has firmly contracted again, a germ can easily travel through the open neck, then out the tube, and finally enter the abdominal cavity. In the womb the germ produces a septic inflammation; in the tube it may cause an inflammation, going

on to the formation of an abscess known as a pus tube; in the abdomen it will set up a peritonitis. All these conditions give rise to blood poisoning.

Puerperal Infection Can Always be Prevented.—Knowing how child-bed fever is caused, it is possible to prevent it. If germs are never introduced into the birth canal they can do no damage there. The entrance of germs is prevented by not inserting into the vagina of a woman in labor, or even bringing in contact with the parts, anything that is not surgically clean. Some women indeed are lucky and may have germs introduced without suffering any evil consequences. But the majority are bound to pay the penalty. Most of the deaths that have occurred during or shortly after child-birth have been caused by puerperal infection, a preventable disease. If a woman should regard the precautions given in this chapter as being too troublesome and "fussy," let her reflect that they save human lives. Anything less is fraught with danger. No better picture of the result of carelessness and negligence can be given than the one presented by the physician and man of letters, Oliver Wendell Holmes:

"It is as a lesson," he says, "rather than as a reproach, that I call up the memory of the irreparable errors and wrongs. No tongue can tell the heart-breaking calamity they have caused. They have closed the eyes just opened upon a new world of love and happiness; they have bowed the strength of manhood into the dust; they have cast the helplessness of infancy into the stranger's arms, or bequeathed it, with less cruelty, the death of its dying parent. There is no tone deep enough for regret, and no voice loud enough for warning."

How to Prevent Puerperal Infection.—The only way to prevent puerperal infection is to keep disease germs out of the woman's vagina. This is accomplished by observing surgical cleanliness or asepsis. Nothing that is not sterile must enter the birth canal. In addition to this there must be ordinary

cleanliness in everything concerning the woman. It is partly on account of their knowledge of asepsis that the physician is to be preferred to the midwife and the trained nurse to the monthly nurse.

All the directions given in Chapter XIX concerning the preparations for the confinement are to be rigorously followed: the room, the bed and the dressings should be made ready in the manner described. The rules laid down in this and the following chapter must be obeyed to the letter. Only water that has been boiled may be used about the patient, even when it is to be made up into a disinfectant solution. All articles that come in contact with the woman in labor should be boiled for at least five minutes, or if boiling would injure them they should be immersed for half an hour in a disinfectant solution, such as bichlorid of mercury 1 to 1000 or carbolic acid 1 to 20.

But it is not sufficient that everything employed about a woman in labor be rendered aseptic; it must be kept so. The moment a sterile object touches something that is not sterile the object is itself no longer sterile, but has become infected. An instrument that has been boiled remains aseptic or sterile if held in a hand that has been sterilized, but when touched by a hand that has not been rendered sterile it is no longer surgically clean. Consequently before they can touch any object or any part of the patient which is to remain sterile the hands themselves must first be sterilized.

A common and efficient method of sterilizing the hands is to scrub them for ten minutes with a nail brush, tincture of green soap and hot water, the latter being changed several times, and follow this by a thorough scrubbing with alcohol and then by an immersion for at least two minutes in a 1 to 1000 bichlorid of mercury solution. After this process the hands must not touch anything that is not sterile, for a hand that has been thoroughly sterilized becomes infected as soon as it touches the face or dress or any other object which has not been ren-

dered aseptic. Consequently, should a person with sterile hands inadvertently touch something not surgically clean, should she for example scratch her face or brush her hand against her dress, she must immediately immerse her hands in the bichlorid solution or even scrub them again before so doing.

THE MANAGEMENT OF THE FIRST STAGE OF LABOR.

During the labor, only the physician and the nurse should be in the lying-in room. Relatives and friends whose services are not required should be excluded. It is especially necessary to keep out those loquacious neighbors who delight in describing serious or fatal cases which have come to their notice. The nurse, too, must refrain from alluding to any dangerous or harrowing cases she may have attended.

As stated in Chapter XIX, the first step in the management of a labor is to give an enema of a pint of soapsuds containing a teaspoonful of turpentine. When gonorrhea is known or suspected to be present the vagina should be scrubbed with soap and water and then douched with a 1 to 2000 bichlorid solution. Under ordinary circumstances, however, a douche is undesirable. The hair may be brushed and arranged in two braids. After the bath, given as directed in Chapter XIX, the patient is dressed in a clean nightgown, wrapper and easy slippers. In cold weather she should wear in addition a thin woolen undershirt and woolen stockings.

In the daytime the woman may then be up and about, walking about the room, sitting in a chair or lying on a lounge. During a pain she may obtain some relief by lying down or sitting with the body inclined forward, the hands grasping a chair in front. At night it is better for the woman to sleep. She is usually ordered to bed when the physician finds upon internal examination that the external os or mouth has reached the size of a silver dollar, although he often waits until the os is fully dilated. After this time the woman should never sit on a closet, but should always use a vessel of some sort.

Diet During the First Stage of Labor.—When labor comes on in the daytime it is necessary at frequent intervals to supply liquid nourishment, such as milk, broths and the like, with a very small quantity of bread, toast or crackers. The woman should drink large quantities of water, plain or effervescent, and may be allowed a moderate amount of tea and coffee.

The Administration of an Anesthetic.—Many physicians make a practice of giving an anesthetic when the pains become severe. Ether is the safest anesthetic. Ordinarily it is employed not to put the woman to sleep, but merely to obtund the sense of pain. Ether must not be given too long; consequently it is administered as late in the labor as possible, being usually deferred until the second stage when the abdominal muscles are brought into play. It is important not to give too much ether, therefore the anesthetic should not be given until just as the pain is coming on. A light towel is then thrown over the face, and as the patient exhales, a few drops are poured on the towel just below the tip of the nose, so that the vapor is sucked into the lungs as the patient breathes in. It takes only a little ether to obtund the sensibilities, and no more should be given than is necessary for this. As soon as each pain passes off the administration of ether should be suspended, to be assumed with the onset of the next pain.

THE MANAGEMENT OF THE SECOND STAGE OF LABOR.

As the second stage draws near, a large, clean, new sponge or some clean towels should be at hand to catch the waters when they break. With the advent of this stage of labor and the participation in it of the abdominal muscles the woman will want something to pull on to aid her in her bearing-down efforts. To supply this need a "puller" may be made by tying a twisted sheet, a roller towel or a rope to the foot of the bed. The woman pulls on this while she braces her feet against the footboard of the bed.

The patient will often feel better if the small of her back is pressed upon by the nurse or rubbed briskly or if a hot water bottle is applied to it. Occasionally washing the patient's face and hands with cold water will prove very grateful. A cramp in the leg may be relieved by forcibly stretching out the limb, at the same time pulling the foot up toward the knee.

As the time of actual delivery approaches, the nurse or attendant must see that everything is at hand. The patient should be placed in the desired position on her back or side. If on the latter, a clean pillow should be placed between the knees, or the upper limb should be supported by the nurse. A sterile obstetric pad is then placed beneath the hips and a sterile sheet is draped over the side of the bed or pinned around the waist with the side next the accoucheur left open and the long end fastened beneath the patient's arm. The physician should have within easy reach a basin containing a disinfectant solution for his hands and another basin containing bits of cotton in an antiseptic solution. Near by should be the material for tying the cord and the scissors for cutting it, all of which must be sterile; a glass containing a warm solution of ten grains of boric acid to the ounce of water, pieces of soft linen and a medicine dropper; and a bottle of fluid extract of ergot, with a teaspoon. A sterile douche bag should also be in readiness, with sterile hot and cooled water and an aseptic bath thermometer.

A warmed blanket should be at hand in which to receive the baby. Hot and cold water, which need not be sterilized, should be easily available in tubs, basins or buckets, for resuscitating the infant should it be asphyxiated.

Inasmuch as the actual delivery is the work of the physician and of him alone, a description of it here would be out of place. Suffice it to say that the skill of an accoucheur consists in preventing tears and other accidents and in meeting the various complications as they arise.

As soon as the baby's head is delivered the eyes are wiped

DANTE'S BEAUTIFUL BEATRICE.

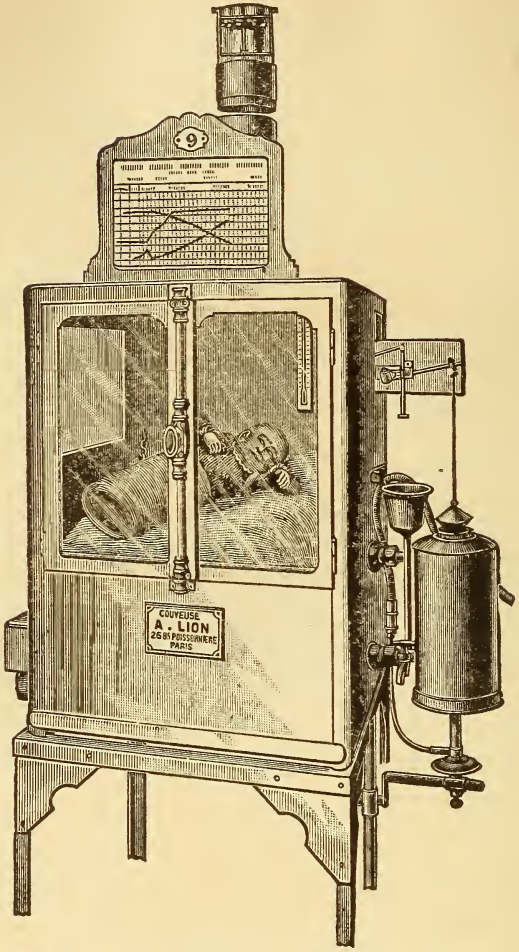
In all literature no woman has been so immortalized for her beauty of face and figure, and sweetness of spirit, as Beatrice, *beloved of the Poet* Dante. *Beatrice is the central figure.*

with a piece of soft linen which has been soaking in the boric acid solution, more of the solution being introduced later by means of the medicine dropper.

CARE OF THE NEW-BORN INFANT.

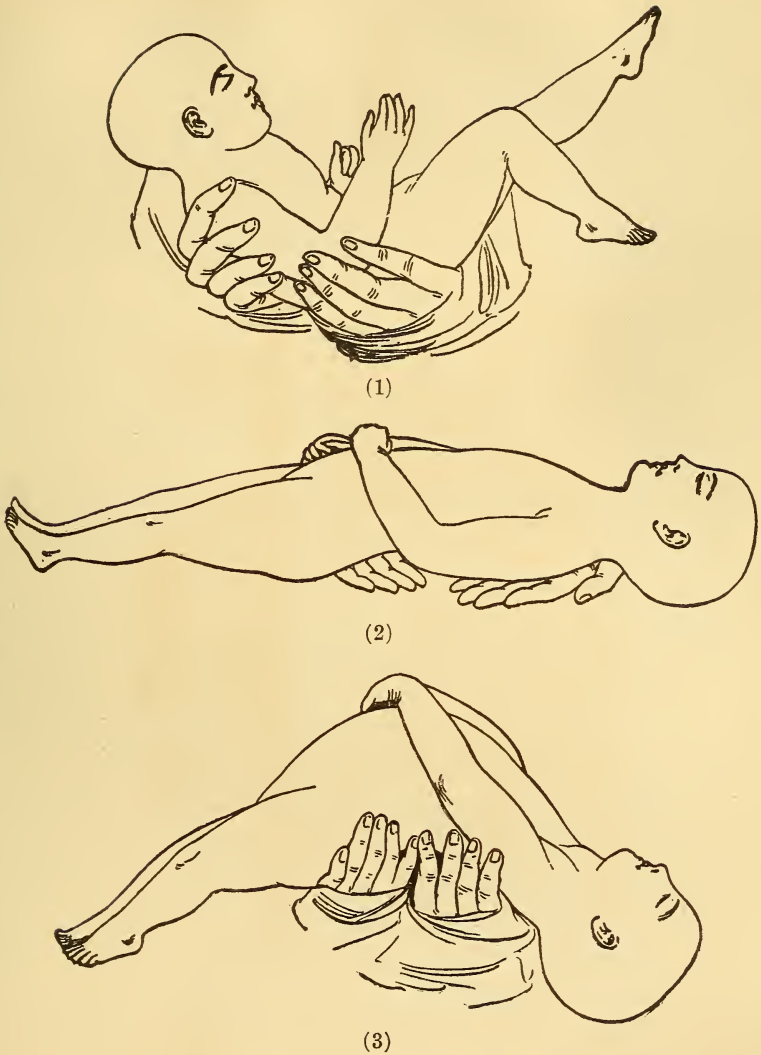
As soon as the baby is born it is held by its thighs and legs, head downward, while the physician crooks his little finger, covered or not with a piece of old linen, and introduces it in the baby's throat back of the tongue, so as to clear the air passages of any blood or mucus that may have been inspired during the passage through the birth canal. The infant is then wrapped in a warmed towel and laid upon its right side with its face turned away from its mother. As soon as the umbilical cord has ceased to beat it is tied about two fingers' breadth from the child's body with a firm double knot, the ends of the string being then tied with a single and with a bow knot. The physician then places his hand upon the baby's abdomen so that the cord lies between the fingers, and holding the scissors close to those fingers with his other hand, he cuts the cord off on the outer side of the knot. The child is then wrapped in a warm blanket and put in a safe place, preferably its basket or crib.

Care of a Premature Infant.—A premature child should be placed in an incubator. In its absence a clothes basket, bath-tub or wooden box may be used. This should be lined first with heavy wrapping paper and then with heated cotton or blankets and filled for half its depth with cotton wool. The child is laid in this and surrounded with hot water cans or bottles, and covered all but its face and bottom with lamb's wool, cotton wool or cotton batting, held in place by gauze bandages. A piece of absorbent cotton or wool should be placed between the child's thighs. A blanket or shawl then covers the basket with the exception of the baby's head. The incubator is to be kept at a temperature of between 85 and 95 degrees Fahrenheit.



A Premature Infant in an Incubator.

The Treatment of an Asphyxiated Baby.—If the child does not breathe after birth, the cord should be immediately tied and cut as described below, and one of the following methods of inducing artificial respiration, or all in succession, should be tried. The child may be alternately folded and unfolded like a book, as shown in the accompanying illustrations. It may be supported by the feet, with the forehead resting on a table, while



FOLDING AND UNFOLDING AN ASPHYXIATED BABY,
IN AN EFFORT TO START THE BREATHING.
The various steps in the movement are numbered in order.

light compression with the thumb and fingers is made on its chest about twenty times a minute. Wrapped in a towel and

grasped by the shoulders, the baby may be swung first between the physician's knees and then over his shoulders. Another method is to stretch the baby's arms high above its head and then press them down to its sides. The child's neck may be placed over a mug, and through a clean towel spread over the child's face the physician may very gently blow a little air into the child's mouth. Slapping the buttocks and rubbing the back and chest vigorously may start the breathing. The infant should frequently be placed in a hot bath to prevent chilling. While in such a bath ice water may be poured on the chest and abdomen. Sometimes the shock of placing the baby alternately in hot and cold water will stimulate the respirations.

CARE OF THE MOTHER DURING THE THIRD STAGE OF LABOR.

Meanwhile the mother must be receiving attention. As soon as the child's body is born she must be given a teaspoonful of the fluid extract of ergot in a little water. At the same time the womb is grasped through the abdominal wall, with the palm of the hand placed above, the thumb in front and the fingers behind, and is rubbed, kneaded, squeezed and pressed upon to stimulate it to contract and thus prevent hemorrhage. After a while the uterus will be felt to contract firmly. Then during a pain the physician presses down the womb and squeezes out the after-birth. The kneading and pressing are continued for fifteen minutes more. All the soiled towels and pads are then removed, the parts cleaned, and those sheets known as "the temporary bed" slipped out. A sterile, folded, dry, warmed sheet or another sterile obstetric pad is then placed under the patient. A pad or compress, consisting of one or two folded towels, is laid above the navel, and the binder is adjusted so as to reach from the ribs to the hip bones, being pinned from above downward so as to fit snugly. Then with surgically clean hands the occlusive bandage is applied between the thighs and pinned to the binder both in front and behind.

CHAPTER XXII.

THE CARE OF THE MOTHER AFTER LABOR.

The Prevention of Infection. Rest and Quiet: Position to be assumed in bed; Getting up; Visitors. Diet for a Nursing Mother. The Life of the Nursing Mother. Bathing During the Puerperium. Rules Concerning Urination. Attention to the Bowels. Care of the Breasts: Care of the nipples; The mammary binder; Emptying the breasts; Care and cleanliness; The treatment of congested and distended breasts.

"Look here and weep with tenderness and transport!
What is all tasteless luxury to this?
To these best joys, which holy Love bestows?
Oh Nature, parent Nature, thou alone
Art the true judge of what can make us happy."

—*Thomson.*

THE chief concern of both the physician and the nurse in charge of a woman after labor is the prevention of infection. This is attained by the same precautions in regard to surgical cleanliness as were necessary during the labor itself. Absolute cleanliness of the patient, of every one who attends her and of everything that comes in contact with her, will usually avert the commonest and most fatal complication of this period—puerperal sepsis. This is by far the most important consideration. There are other matters, however, which add to the comfort and safety of the patient.

The life of the woman must be carefully regulated both

during the period immediately following labor and throughout the whole of lactation.

REST AND QUIET.

The mother must have absolute mental and physical rest for the first few days after labor. She must not be disturbed by loud noises or by a glaring light. For these first few days no extended conversation should be allowed in the lying-in room.

Position to be Assumed in Bed.—The woman after delivery should lie flat on her back, for the first six hours without a pillow. According to Hirst, she should remain on her back for at least a week. Davis, however, believes that this position, if too long continued, has a tendency to favor backward displacement of the womb. As soon as the patient feels rested and comfortable and there is no longer any danger from hemorrhage or relaxation of the womb, the author permits his patients to move about in bed, turn on either side or lie upon the abdomen, and after several days he allows the shoulders to be raised a little. The patient is then gradually propped up higher in bed until in a few days she can be placed in a sitting position.

Getting Up.—The patient should be kept in bed until the womb has so shrunken in size that it has again returned to the pelvis and until there is no longer any blood in the lochial discharge. This state usually is reached in from ten to fourteen days. A safe rule would be for the woman to remain strictly confined to the bed for two weeks. If she gets up beforehand her womb is liable to be displaced. After the fourteenth day she may put on stockings, bedroom slippers and a flannel wrapper and pass the day upon a lounge, rising to use the commode and sitting up as long at a time as she can without fatigue. As a rule she should not walk about the room for a week longer or go down stairs until the end of the fourth week. These directions, however, must often be varied to suit the individual case.

Visitors.—The patient's husband and mother are the only visitors to be allowed in the lying-in room, and they must not come too frequently. Even they can remain for but a short time and must avoid exciting subjects in their conversation. All other visitors are to be excluded during the first week. After this period the patient's relatives and intimate friends may see her for a few minutes, if they be of cheerful disposition. But the nurse must keep out those inquisitive "busybodies" who often come pouring into the room inquiring minutely as to the particulars of the case and offering suggestions and advice based on their experience with cases which they believe to have been similar and which they want to describe in detail.

THE DIET FOR A NURSING MOTHER.

The diet during the first three days should be very light, consisting chiefly of milk, with the addition of toast or crackers, gruel mush, grits or boiled rice and a little stewed fruit or baked apples. Gradually soft-boiled eggs, custard, junket, light puddings, broths, soups, jelly, sponge cake, ice cream, a charlotte russe, fresh fruit and vegetables are added to the dietary during the first week. The white meat of fowls, sweetbread, lamb chops, fish and oysters may be given during the second week, and beef, bacon and potatoes during the third week. The puerperal woman should avoid rich and indigestible foods and alcoholic drinks.

Throughout the whole of lactation, the period during which she nurses her baby, the mother must be careful to eat only what is digestible and nutritious, observing all the directions given in chapter VI as to thorough mastication of the food and regularity in the time of meals. The diet may have to be modified as described in chapter XXIV, should it be necessary for any reason to alter the character of the milk.

THE LIFE OF THE NURSING MOTHER.

In addition to being careful about her diet, the nursing mother must take regular exercise in the open air. She must,

however, be kept free from fatigue, both mental and physical, and also from worry, anxiety or nervous excitement. Late hours are always to be avoided. Inasmuch as a powerful emotion, such as fright or violent anger, may render her milk unfit for use, a woman who has been subjected to such an influence should avoid nursing her baby for some hours afterward, emptying her breasts by means of a breast pump and giving the child barley water for one or two feedings.

BATHING DURING THE PUERPERIUM.

In the morning, about an hour after breakfast, the patient should be bathed in tepid water with a washrag and soap. In the evening she may receive a light alcohol rub.

The genital region should be cleansed and dressed every four hours and after each evacuation of the bladder or rectum. The nurse, after seeing that everything she requires is at hand, places the patient on a douche pan and arranges the coverings. She then sterilizes her hands and, gently separating the labia, pours on the parts from a pitcher a disinfectant solution such as a 1 to 2000 bichlorid solution. The parts are then dried with bits of sterile cotton and a fresh sterile occlusive dressing, made as described in chapter XIX, is applied, being held in place by a T bandage or by pinning its ends to the abdominal binder.

RULES CONCERNING URINATION.

After labor there frequently is a tendency to retention of urine. If the woman is unable to pass her urine she should be placed on a warm bed pan or douche pan half full of warm water. If this fails, a hot application such as a turpentine stupe should in addition be made over the kidneys, bladder or external parts, or a clean sponge or a large piece of cotton wet with warm sterile water should be placed between her thighs, or the patient should listen to the sound of running water. Often if left to herself the patient is better able to urinate. Sometimes

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THE PRIDE OF THE HOUSEHOLD.

When the father first looks at his first born in the arms of the nurse or of the mother, a thrill of pride and paternal love springs into his heart for the little life which has come into the home.

if raised by means of pillows to a semi-recumbent or a sitting position she can then empty her bladder. If these expedients fail and no urine has been passed six hours after labor, resort must be had to catheterization. This is to be entrusted only to the skilled hands of the physician or the trained nurse, and must be performed aseptically with all the precautions required by surgical cleanliness. Should any germs enter the bladder, they may set up an inflammation that is very difficult to cure. After this the woman is to be catheterized three times a day if necessary, in every instance recourse having first been made to each of the expedients mentioned above.

ATTENTION TO THE BOWELS.

Constipation is the rule after labor. At the end of forty-eight hours it is well to administer a laxative of some sort. The choice of the drug employed will depend upon the patient's inclination or prejudice. Castor oil may be given in warm milk or in a frothy liquid, such as porter or soda water. A good plan is to give half a bottle of citrate of magnesia on the evening of the second day after labor, and the other half the following morning before breakfast. If the bowels do not move within two hours an enema should be given.

CARE OF THE BREASTS.

Emptying the Breasts.—The infant should be nursed at regular intervals of two hours, as described in chapter XXIV. When, owing to the death of the child, mechanical measures are necessary for emptying the breasts, a breast pump may be employed, the breasts at the same time being rubbed and massaged with oiled finger tips in a direction toward the nipple. Sometimes the use of massage and the breast pump is required to supplement the child's sucking when the latter is not sufficient to thoroughly evacuate the breasts.

Care and Cleanliness.—The observance of care and clean-

liness in regard to the breasts and nipples is the best preventative of subsequent trouble. The breasts should never be handled by either the nurse or the patient with fingers that are not thoroughly clean.

Care of the Nipples.—After each nursing the nipples should be washed by means of some absorbent cotton with warm or cold water and castile soap or with a solution of boric acid 10 grains to the ounce, and should then be dried with a soft cloth. After each washing the skin of the nipple and the surrounding parts should be anointed with sterile olive oil or sterile cocoa butter applied by means of fresh absorbent cotton or a piece of clean linen. A supersensitive nipple may often be relieved with extract of witch hazel.

A nipple shield must be used when the nipple becomes chapped or cracked or when it is very tender or of such a size and shape that the baby cannot obtain a satisfactory hold. A glass shield with a rubber nipple is the one most frequently employed. It should be simple and should fit tightly. If filled with warm milk and inverted over the nipple the child will often take it better. It should be boiled after being used, and should be kept in a boric acid solution.

A depressed nipple should be drawn out by means of the breast pump, suction being applied by a rubber bulb or by the mouth through a piece of rubber tubing, or a bottle should be filled with very hot water, emptied rapidly, and quickly inverted over the nipple.

The Mammary Binder. — The support of the patient's breasts by means of the mammary binder will increase her comfort and may prevent serious disturbances. There are many forms of this binder. The simplest is a straight bandage of unbleached muslin, properly shaped by darts, applied with a compress under the outer portion of each breast. The Murphy binder is likewise made from a straight piece of muslin, but has a notch for the neck and two deeper notches for the arms.

Another bandage can be made out of a handkerchief folded as a triangle and passed under the breasts and tied behind the neck, the lower end being kept in position by being fastened with safety pins to the abdominal binder or to a strip of muslin or a bandage tied around the waist. One handkerchief may be

Breast Supported by a Handkerchief.

applied to each breast. The obstetrical breast support with knitted bosom is much less cumbersome and therefore more desirable when the patient is out of bed.

The Treatment of Congested and Distended Breasts.— When the flow of milk is excessive the breasts may become distended or even congested, despite all care. Congestion is apt to occur shortly after the breasts assume their function of supplying milk. Both conditions are treated by the dietetic and other measures mentioned in chapter XXIV for reducing the quantity of the milk. A purge must always be given. Covering the breasts with sterile gauze will soak up the leakage and prevent it from soiling the clothing. Should the milk fail to

escape, a condition known as caked breast results. This is best treated by washing the breasts with soap and water just before the child is nursed or the breast pump is applied, and then with aseptic hands gently rubbing warm sterile olive oil on them for ten to twenty minutes, massaging them from below upward and from the base toward the nipple.

Preceding the massage hot fomentations or cloths soaked in lead water and laudanum may be applied for fifteen to twenty minutes, care being taken to cleanse the nipple thoroughly before putting it in the baby's mouth. When inflammation or an abscess develops the baby must be immediately taken from the breast and the physician summoned.

PART IV.

THE BABY.

CHAPTER XXIII.

APPEARANCE AND DEVELOPMENT OF THE NORMAL INFANT.

Color and appearance of the skin. Shape and development of the head; the fontanelles. The face at birth. The baby's hair. An infant's tongue. The baby's gums. Cutting the Teeth: The first or milk teeth; the second or permanent teeth; Teething a normal process. The shape and appearance of an infant at birth; Position assumed by the baby. The infant's size and weight at different ages. The baby's bowels. The baby's urination. The other functions of the baby.

"To aid thy Mind's development,—to watch
Thy dawn of little Joys,—to sit and see
Almost thy very Growth,—to view thee catch
Knowledge of objects,—wonders yet to thee."

—*Byron.*

A MOTHER should be familiar with the appearance of the healthy baby in order to be able to tell when it is abnormal or sick. The normal weight at different ages should therefore be known. Unless the mother knows when the various teeth should be cut and when the child should begin to notice, she will be unable to decide whether her baby is developing properly or not.

COLOR AND APPEARANCE OF THE SKIN.

At birth the skin is of a decided lobster red color and is covered thickly in many parts with a peculiar whitish, waxy substance known as the vernix caseosa. After this has been removed and the baby has been bathed, the skin is found to be soft and extremely delicate and covered with a coating of fine down, which begins to fall out dur-

ing the first week. By degrees the color fades into some shade of pink or, where a slight degree of jaundice is present, to a yellowish-red tint. As the infant grows older the color changes to a delicate pinkish white.

SHAPE AND DEVELOPMENT OF THE HEAD.

The head is large in comparison with the chest, being nearly as long as the trunk. The shape of the baby's head,

Skull at Birth, Showing the Fontanelles.

as seen from above, is normally round or oval, the circumference being about thirteen inches. The head of a newly-born child may have a startling shape, as the result of prolonged pressure. One side may be flattened while the other bulges, or the head may be long and narrow. The idiotic expression that such a shape sometimes imparts to an infant often causes much distress, alarm and anxiety to the parents. In almost every case, however, the abnormal appearance does not represent a permanent deformity but passes away, usually in a few days or a few months. No attempt should ever be made to squeeze the head into shape.

Just behind the forehead is a diamond-shaped spot, about three-eighths of an inch to an inch and a quarter long

BRIBING THE BABY.

The medicine may be bitter, and the little patient unwilling to take it, yet the offer of a new doll or a trinket is often sufficient to induce the baby to swallow the unpleasant but necessary potion.

and seven-eighths of an inch wide, where the bone is absent, the brain being covered only by a thin membrane and the skin. This is known as the *anterior fontanelle*. Depression of this spot indicates that the child is not properly nourished. The spot seems to enlarge as the infant grows older, up to about the ninth month, but the increase may be apparent rather than real. From the ninth to the twelfth month it seems to remain about the same size; it then gradually becomes smaller and should be closed by the nineteenth or twentieth month. At the back of the head is a smaller and less significant opening, known as the *posterior fontanelle*.

The Face at Birth.—The face in infancy occupies only one-eighth as much space as the rest of the head. Not uncommonly, at birth, it is swollen and the features are out of shape. This is usually due to pressure and will soon pass away. The *eyes* are of a dull, grayish blue, expressionless and almost always half open when the child is awake and entirely shut when it is asleep. Some time elapses before the child knows what it sees.

The Baby's Hair.—The hair at birth is often thick, dark, and one or two inches long, but it may be short, fine, of a light brown shade, and small in amount, coming down to a round point on the forehead and leaving the temples bald. During the second and third weeks the first hair often falls out, that on the back of the head being worn away by the rubbing on the pillow. The new hair grows in very slowly and is of the same character as the first but lighter in color.

An Infant's Tongue and Gums.—During the first week of life the tongue is comparatively dry, long and narrow and slightly coated.

The gums at birth are of a light pinkish color, smooth, firm, and quite narrow, and rather sharp and hard at the

edges. Some months later the edges grow broader in front and become more prominent.

CUTTING THE TEETH.

The first teeth may appear at any time during the first year of life, usually about the end of the sixth or seventh month. They often are cut earlier than this, but may be delayed until the second year. The teeth usually come in groups, with an interval between the cutting of each group.

Names and Time of Appearance of the Milk Teeth.—There are twenty milk teeth or temporary teeth, ten on each jaw. The two middle ones are called the central incisors; next to these come the lateral incisors, then the canines, next the anterior molars and finally the posterior molars. The canine teeth of the upper jaw are often spoken of as the eye teeth, those of the lower jaw as the stomach teeth.

The two lower central incisors are the first to appear, coming through the gums about the seventh month. Then follows an interval of three weeks in which no teeth are cut. Between the age of eight and ten months the two central upper incisors push through, followed closely by the lateral upper incisors. Then there is another interval of from one to three weeks, ended by the eruption of the four anterior molars and the four lower lateral incisors, which appear one at a time, in no particular order, during the period between the twelfth and fifteenth months. No teeth are then cut for two or three months until the child is eighteen months old, when, during the next six months, the canines come through. After a third pause of two to four months the posterior molars make their appearance, which occurs between the twentieth and thirtieth months of life.

The Second or Permanent Teeth.—There are thirty-

two permanent teeth, four incisors, two canines, four bicuspids and six molars in each jaw. The first four teeth appear at about the sixth year back of and next to the second molars of the milk teeth; they are called the six-year molars. In the seventh or eighth year the temporary incisors are replaced by the permanent ones. The temporary molars fall out during the ninth or tenth year, and the bicuspids appear in the space left. In the eleventh year the permanent canines take the place of the temporary ones, and in the twelfth year the four second molars are cut. If the second teeth do not come in as they should, or are crowded out of position, an ugly deformity is liable to occur unless the child is treated by a dentist.

Teething a Normal Process.—Teething is not a disease; it is a perfectly normal process. Other disturbances that occur while the teeth are pushing through must not be attributed to teething. Whenever the baby is sick, the cause of the trouble should be thoroughly investigated and the child should be taken to a doctor. Many a child has been allowed to suffer, and often to die, because its symptoms were attributed to teething. Sometimes the child does exhibit various symptoms which are due to the eruption of the teeth and which disappear as soon as it is over. Disordered dentition is shown by slight diarrhea, loss of appetite, feverishness, fretfulness, some eruption of the skin, irritability or other nervous symptoms. This is the exception, however, rather than the rule. Lancing rarely is necessary. There is no objection to rubbing the gums slightly with the fingers, but they should never be rubbed with any hard substance, such as the finger-nail or a thimble.

THE SHAPE AND APPEARANCE OF AN INFANT AT BIRTH.

The trunk of an infant at birth is egg-shaped with the larger part below, the chest being poorly developed and the

abdomen large and prominent. The shoulders and hips are narrow, their circumference at birth being less than that of the head. The arms are short and well rounded. The legs are even shorter than the arms, being little longer than the trunk, and are less rounded. They have the appearance of being crooked owing to the tendency of the infant to turn the feet in and thus produce a seeming bowing of the legs.

The cord begins to dry up immediately after birth and after twenty-four hours a red line forms around its base. It then gradually separates, falling off about the fourth or fifth day. The stump that is left afterwards retracts within the navel.

The Position Assumed by the Baby.—At birth it lies comparatively still but soon it begins to move its arms and legs continually.

The normal position for an infant to lie in is on its side, with the head turned slightly, the thighs drawn up and the back presenting one long concavity.

THE INFANT'S SIZE AND WEIGHT AT DIFFERENT AGES.

The average height or length of the new-born infant is about nineteen inches, although the normal range is between sixteen and twenty-two inches. The weight at birth is, on the average, seven pounds, but may be as low as six and a half or as high as ten pounds within normal limits. During the first week, and often for a longer period, the baby loses in weight. Throughout the next three weeks and the second month it gains about one ounce a day, and during the third and fourth months gains about five ounces a week, or three-quarters of an ounce a day. The following table of Griffith shows how a child should gain in height and weight from birth up to the sixteenth year:

TABLE SHOWING THE BABY'S GROWTH IN HEIGHT AND WEIGHT.

AGE.	HEIGHT.	WEIGHT.	
Birth	19 in.	7 lbs. 9 oz.	
1 week	.....	7 " 7½ "	
2 weeks	.....	7 " 10½ "	Gained 1 oz. a day; 7 oz. a week.
3 "	.....	8 " 2 "	
1 month	20½ in.	8¾ "	
2 months	21 "	10¾ "	
3 "	22 "	12¼ "	Gained ¾ oz. a day; 5½ oz. a week.
4 "	23 "	13¾ "	
5 "	23½ "	15 "	Double original weight.
6 "	24 "	16¼ " ..	Gained ⅔ oz. a day; 4⅔ oz. a week.
7 "	24½ "	17¼ "	
8 "	25 "	18¼ "	.... Gained ½ inch a month.
9 "	25½ "	18¾ "	.... Gained about 1 lb. a month.
10 "	26 "	19¾ "	
11 "	26½ "	20½ "	
1 year	27 "	21½ "	.... Treble original weight.
2 years	31 "	27 "	..... Gained 4 inches a year.
3 "	35 "	32 "	
4 "	37½ "	36 "	..... Double original length.
5 "	40 "	40 "	Gained 3 inches and 4 lbs. a year.
6 "	43 "	44 "	
7 "	45 "	48 "	Gained 2 inches and 4 lbs. a year.
8 "	47 "	53 "	
9 "	49 "	58 "	Gained 2 inches and 5 lbs. a year.
10 "	51 "	64 "	
11 "	53 "	70 "	Gained 2 inches and 6 lbs. a year.
12 "	55 "	79 "	
13 "	57 "	88 "	
14 "	59 "	100 "	Gained 2 inches and about 9 lbs. a year.
15 "	61 "	109 "	
16 "	63 "	117 "	

The *systematic and frequent weighing* of infants during the first year of their lives is considered by Rotch to be of great importance, and far more useful as a means for ascertaining their nutritive condition than any other one method known. The weighing of the baby determines whether the food is sufficiently nourishing in quality, or great enough

in quantity. The first symptom of oncoming disease, especially of a chronic form, is loss of weight. The child should be naked when weighed or always have on clothes of the same weight. The same pair of scales should be employed at each weighing. It is advisable to weigh the baby at a stated interval after a feeding, as an infant is always heavier after eating.

THE BOWEL MOVEMENTS OF A BABY.

The bowels of a new-born infant generally move once or twice during the first day of life. For the first two or three days, until the child begins to nurse well, the passage consists of a thick, sticky, odorless, black or greenish black substance, called meconium. It then becomes of a golden yellow color, which sometimes changes upon exposure to the air to a greenish yellow, and shows a large proportion of water. It has very little odor and frequently contains small masses of undigested milk. For the first six weeks the bowels move two to four times in every twenty-four hours. From this age to that of two years there are usually but one to three movements daily, the passage being of greater consistency and a little darker in color and having a rather more fetid odor. If the soiled diaper is allowed to be exposed to the air, the color takes on a slight greenish tint. After the child is two years of age and is on a varied diet the passages become completely formed, with a distinctive fetid odor.

THE BABY'S URINATION.

The urine of a healthy infant is generally like water in appearance, has very little odor and does not stain the diaper. The baby urinates about six to ten times a day, the frequency varying greatly in different children and under different circumstances. As the baby gets older, the frequency diminishes to about six times a day or less.

Other Functions of the Baby.—These functions vary as to the time of their development. The average infant usually *cries* as soon as it is born, and during the first year of its life expresses its distress and desires by crying. It seldom cries without some reason, although the cause may be trivial.

A baby may *smile* to show its pleasure by the time it is a month old, but it does not *laugh* until five or six months of age. Its *hearing* is established very soon, but it usually does not *recognize objects* before the sixth or eighth week. By the time it is three months old, or sometimes a little while before, it begins to make efforts at *grasping* after objects.

The baby is able to *lift its head* a little before the age of two months and by the time it is three or four months old can hold it up without support. It is not able to *sit up* unsupported until at least six months of age, but may begin to attempt to sit up between the ages of three and four months. By the seventh or eighth month the child begins to *creep* about on its hands and knees. It sometimes makes efforts to *stand* when it is six months old, and by the time it is nine or ten months of age is often able to stand without support and frequently to *walk* a few steps by holding on to the furniture or to someone's hand. By the time it is a year old, a strong child can walk a little without help, but fifteen or eighteen months is early enough for this accomplishment.

As the child grows older it begins to *imitate sounds.* By the age of eight or nine months it may utter several syllables intelligently, and when a year old can often say a few words, such as "papa" and "mamma." When eighteen months of age it can usually express itself by the use of a few words aided by gestures, and by the end of the second year it can usually *speak* in short sentences.

CHAPTER XXIV.

THE FEEDING OF INFANTS.

BREAST FEEDING.

Mother's milk the best food for a baby. The baby's thirst. Composition of human milk. How to modify breast milk. Conditions affecting the milk. Rules for Nursing the Baby. Feeding during the first few days of life; Regularity in feeding; Frequency of feeding; How long to nurse; How the baby should be held. Mixed feeding. The Wet-Nurse; Choice of the wet-nurse. Weaning the child; Indications for weaning in the child, in the mother. Methods of weaning. The time for weaning.

"Suck, baby, suck! mother's love grows by giving;
Drain the sweet founts that only thrive by wasting."

—*Lamb.*

THERE are two methods of feeding an infant—by the breast and by the bottle. The best food for a baby unquestionably is its mother's milk.

The stomach of a new-born babe is sufficiently developed to digest the human milk nature intended for it, but is unequal to the task of digesting cow's milk. The fortunate child that is nursed by its mother is much less liable to be attacked by disease than is a bottle-fed baby, and is to a certain extent exempt from digestive disturbances.

Nursing doubtless is the greatest inconvenience of motherhood, and its demands are most exacting; it necessitates a woman's being with her baby at stated hours throughout the day and night, thus seriously interfering with her work or pleasure. But this self-sacrifice a mother owes to her baby. If she bring a child into the world, she must be willing to provide it with the best nourishment.

BABY'S MEALTIME IN THE NURSERY.

Often the older child will care for the baby and give its meals in the playroom. Rules for the kind of bottle, contents and use, with proper directions for feeding the child, are found in the chapter on Infant Feeding in this volume.

This is the child's right. The greatest infant mortality is always among the bottle-fed babies.

Not every mother, however, is able to nurse her child, as her milk may not be sufficient or of a quality suited to the baby's needs. Measures must be taken in the first case to increase the quantity of the milk and in the second to increase those ingredients which the baby needs and decrease those that are harmful to it.

There are times, however, when a mother cannot nurse her child at all. Under such circumstances, whenever possible, the baby should still be given human milk, through the employment of a wet-nurse. When the child is unable to be fed on human milk, it must be given some substitute.

It is impossible to so modify the milk of an animal as to make it identical, chemically or otherwise, with human milk; yet cow's milk may be modified so that it resembles as nearly as possible the milk of the mother.

The subject of breast-feeding will be considered in this chapter. Normal lactation will be described, with the measures to be observed by the mother in order to alter the milk should it not be of the proper quality. The time for feeding at the different ages, the position of the child while sucking, and all matters pertaining to nursing will be carefully detailed. Attention will then be given, in a second chapter, to the bottle-fed baby; the methods for artificially preparing milk will be taken up, with the various modifications.

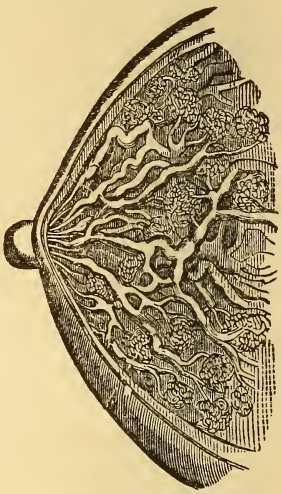
The Baby's Thirst.—Too many mothers forget that the baby gets thirsty as well as hungry. The baby should have plenty of water during the day. The water of cities should be boiled and then cooled before it is given to the baby. An infant should be given water several times a day from a teaspoon, from a glass or from a nursing-bottle. When babies cry it often is because their little throats are

parched with thirst. Because the child stops crying when given the breast does not signify that it is hungry; the milk may have relieved its thirst.

Before taking up the feeding of the baby with its mother's milk, it is well first to state of what this milk consists, how it is altered by conditions affecting the mother, and how it maybe modified to suit the child's needs.

COMPOSITION OF HUMAN MILK.

For the first few days after the child is born, the breasts contain a thin, yellowish, sticky fluid, called *colostrum*, looking like poorly-developed milk, but differing radically from that which flows later. It is not until about the third day after confinement that the secretion of milk becomes well established.



THE BREAST CUT IN HALF. Showing the structure of the mammary gland with the milk ducts all converging at the nipple.

Milk is a secretion of the breasts or mammary glands, consisting of an emulsion of small fat droplets, containing proteids, sugar and salts, held in solution. The percentage of *fat* in human milk varies between three and four and one-half per centum. The quantity of *proteid*, by which is meant that part of milk which enters into the composition of casein or cheese, is about one and one-half per centum. About six and one-half per centum of *sugar* is present. These are the normal proportions. Any one of the three ingredients may be increased or diminished in quantity, often with deleterious effect upon the baby's health.

From about sixteen to fifty ounces of milk are secreted

daily by the mother's breasts; as much as sixty-five ounces a day has been known. The average child, however, requires but from eight to sixteen ounces of milk during the first weeks of life, and from thirty to fifty ounces only between the tenth and twelfth months.

The composition of the milk varies somewhat during the act of nursing. The first milk the child sucks is known as the "fore-milk," which is richest in fat and contains least water. During the first week of lactation the milk usually is richer in proteid and poorer in fat and sugar than it is later. The sugar reaches its normal percentage during the next week or two. The increase of fat is more gradual and continues until the second month when it reaches its normal amount. As the fat increases, the percentage of proteid falls. So long as lactation is normal the milk will vary but little until the last months of nursing when, although the total quantity of milk secreted increases, the percentage of both proteid and fat becomes less.

HOW TO MODIFY BREAST MILK.

The **quantity** of the mother's milk may be *increased* to a limited extent by increasing the amount of liquid the mother takes. If her supply of milk be insufficient, she should drink large quantities of water, tea, coffee, cocoa or cow's milk. She may use any of the various milk foods, she may take plenty of soup, and she may drink malted liquor in some form or one of the thinner extracts of malt.

The quantity can be *diminished* by lessening the amount of fluids taken, by the use of purgatives, which draw the water from the blood, or by the administration of certain drugs which lessen the activity of the mammary glands. These measures, however, merely increase or decrease the water in the milk without affecting its nourishing qualities.

Modifying the Quality.—The *fat* in the milk is in-

creased by increasing the proportion of meat in the mother's diet. The eating of fat has no effect.

The amount of fat is diminished by lessening the proportion of meat.

The *proteid* becomes increased when the child is put to the breast too often and when the mother exercises too little.

It can be diminished by prolonging the intervals between the nursing, and by increasing the mother's exercise up to the limit of fatigue.

Conditions Affecting the Milk.—It is a mistaken notion that various substances must be avoided because they will alter the milk, and thus will give the baby colic. It is only when they disturb the mother's digestion that they cause indigestion in the child. It sometimes happens, however, though rarely, that raw fruit or substances containing much acid, when eaten by the mother without affecting her digestion at all, may in some way alter her milk and disagree with the baby.

Most mothers, if their digestion is good, can eat nearly everything without fear of it affecting the infant. There are certain drugs, however, especially some of the purges, which, when taken by the mother, enter her milk and affect the baby. But, as a rule, most mothers can be free from all anxiety on this point. Large quantities of alcoholic stimulants, if taken by the mother, may do the baby considerable harm.

Menstruation does not always change the character of a woman's milk. The child may experience a slight digestive disorder, lasting two or three days, during the first and sometimes also during the second period after child-birth, but after this the infant feels the disturbance little or not at all. In some cases, however, indigestion occurs each month for a few days during the mother's monthly period.

The Life of a Nursing Mother.—The mental and physical condition of the mother influences the milk. The regulations to be followed by a woman who nurses her baby have been described in Chapter XXII.

RULES FOR NURSING THE BABY.

Feeding During the First Few Days of Life.—When the child has been washed and dressed after birth it should be put to the breast as soon as the mother has been washed and dressed and feels sufficiently rested to permit it—in about eight hours.

As soon as the healthy child is applied to the breast it usually will instinctively suckle. It may be necessary, however, to first moisten the nipple with sugar and water or with milk squeezed from the breast. At first the infant will obtain the thin, yellowish, sticky colostrum, which, besides being nourishing, has a somewhat purgative action on the child's bowels. The early sucking of the child both stimulates the secretion of milk and draws out the nipples into good shape for nursing.

It is a mistake to feed the child with sweetened water, gruel or other indigestible substance during the first day or two of life. Not only is this totally unnecessary, but it is often harmful. The child will usually be satisfied with a little moderately hot water, or, if it really seems ravenously hungry—sucking at the nipple voraciously and crying persistently, it may be given a very little modified cow's milk prepared as described in the following chapter.

Regularity in Feeding.—The importance of regularity in nursing cannot be overestimated. There is nothing so ruinous to the baby's digestion and training and to the mother's comfort and peace of mind as that pernicious, though common, habit of suckling the child every time it cries, simply for the sake of quieting it. The mother thinks the child is hungry when it cries, although often, instead,

it is suffering from indigestion brought on by irregularity in feeding. The milk may quiet it for a time but only increases the indigestion, frequently giving rise to even worse colic. Hot water may be given the baby at any time and will often cause the crying to cease.

This irregularity in feeding not only upsets the child's digestion but it has an unfavorable influence on the character of the milk, often making what has been good milk unfit for use.

It has already been shown how the different constituents of the milk are increased and diminished by too frequent nursing and too long intervals between nursing. Infants are readily made creatures of habit and by being fed at stated intervals can be so trained that they will show signs of hunger only at the time of the accustomed feeding. They should never be allowed to go to sleep at the breast with the nipple in the mouth but should either be kept awake until they have finished or else be removed entirely from the breast. When the hour for nursing arrives the child must be fed and if asleep should be aroused for that purpose.

Care of the Baby's Mouth After Feeding.—After each feeding the baby's mouth should be washed out with a soft rag dipped in a solution of boracic acid in the proportion of 10 grains to the ounce of water.

Frequency of Feeding.—For the first two days of its life the infant may be put to the breast from four to six times in the twenty-four hours. During the day the baby should be nursed regularly every two hours in the first five weeks, every two and a half hours from the sixth to the twelfth week, every three hours from the third to the ninth month, and every three and a half hours from the ninth to the twelfth month. At night the baby may be nursed once or twice during the first week but after that time until the fifth

month it should be nursed only once, at ten o'clock. After the fifth month it is not to be fed at all during the night.

How Long to Nurse.—The duration of each nursing should not exceed fifteen minutes. If there is plenty of milk, one breast, as a rule, is sufficient for one nursing and will be emptied within that time. If there is not enough milk in one breast, the child should be suckled from both breasts at each nursing.

At birth the baby's stomach holds only about one ounce or two tablespoonfuls. The baby at first sucks more milk than it can digest, regurgitating the excess. This vomiting of the baby is merely a wise provision of nature, preventing overfeeding; it need cause little anxiety unless accompanied by a very sour odor and a condition of apparent ill-health. If the baby seems to eat too much it should not be allowed to nurse quite so long.

When the baby is unable to use all the milk, a hard distension of the breasts may result, described as "cake-breast" or "milk-cake," which should be treated as described in chapter XXII, on "The Care of the Mother After Labor."

HOW THE BABY SHOULD BE HELD.

The child should lie on its side, with the head supported by the mother's arm. While the mother is confined to her bed she should lie upon the same side as the breast from which the child is nursing, or she may be slightly propped up in bed with a pillow. After convalescence she leans a little forward while nursing, so that the nipple drops into the baby's mouth. With the first two fingers of the free hand she should slightly steady and elevate the breast to keep the weight from pressing on the child's nose. She should withdraw the nipple now and then if the child sucks too rapidly, to prevent its choking and to allow it to breathe. She presses the breast when the milk does not come easily;

or if it flows too freely of itself, she restrains it by compressing the bases of the nipple between the fingers and the thumb.

When the mother's nipples are of a shape unsuitable for nursing, a shield or artificial nipple will have to be used.

Often it is necessary to give modified cow's milk in addition to mother's milk. This occurs when the mother's milk is deficient in quality or in some of its constituents, as shown by the infant failing to gain steadily in weight. When such a condition arises, it is well to lengthen the intervals between breast feedings and to introduce a bottle of modified milk between them. In this way two, three or four bottles may be given daily.

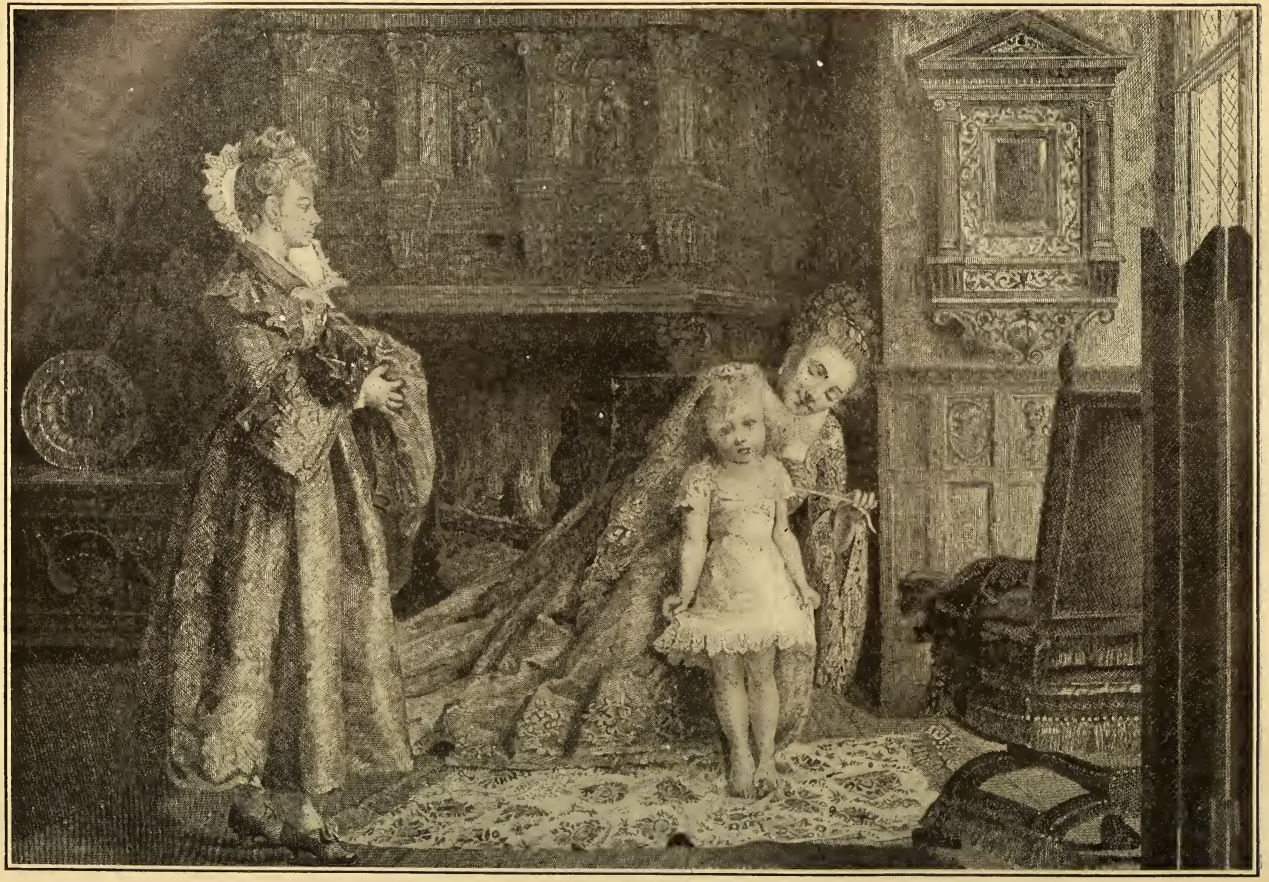
THE WET-NURSE.

As has been said, some mothers are unwilling to nurse their infants. Other mothers, who would gladly suckle their children, have no milk at all or but a little and that only during the first weeks after child-birth. Sometimes after flowing freely for several months the milk may suddenly stop.

In such cases and when owing to the mother's death the infant is deprived of its natural food, instead of weaning the baby it is much better to employ a wet-nurse. There are many advantages and also some disadvantages in this procedure.

Human milk, being the child's natural food, is greatly to be preferred to any substitute. Besides there is always a risk in feeding the child on cow's milk or the prepared foods. Often the employment of a wet-nurse is the baby's only chance for life.

It is very difficult, however, to obtain a suitable wet-nurse. Knowing this, the woman is likely to become tyrannical, lazy, shiftless and unreliable. She often will not take the proper care of herself necessary to preserve the quality



THE PRINCESS AND HER TOILET.

In royal homes the same motherly affection and pride in the child's dainty toilet must exist as in other homes. The artist beautifully portrays the royal mother's interest in her child's morning toilet.

of her milk, and at any moment may become dissatisfied with her position and abandon it. She may, moreover, transmit a hidden disease to her nursling.

The Choice of the Wet-Nurse.—This is a most important matter and, as a rule, should be left to the attending physician. The wet-nurse must be perfectly healthy, strong and not too fat. She should have no symptoms of tuberculosis, syphilis or other communicable disease. If her own baby be healthy, it will be a possible indication as to her own health and as to the nutrient value of her milk. She should preferably be between twenty and thirty years of age and should have a baby approximately the same age as the one which she is to nurse.

The nurse's breasts should be firm or only slightly pendulous, becoming more flabby when emptied. They should contain plenty of milk, allowing some milk to be pressed from them after the child is done nursing. The nipples should project well and be free from deformity, disease or cracks. The wet-nurse should suckle only her foster child.

The personal qualities of the wet-nurse should be taken into consideration. She should be even-tempered, amiable, temperate and reliable. If accustomed to giving way to violent emotions, she may render her milk unfitted for the child, producing colic, diarrhea, convulsions and even more serious results. If addicted to the use of liquor, she may injure the child while intoxicated, and if she be unreliable or irresponsible in any way, she may neglect the child, give it cow's milk, or allow it to suffer harm in other ways.

J. P. Crozer Griffith says: "A married woman is to be preferred, but the difficulties connected with obtaining a good wet-nurse are so great, and married wet-nurses often so scarce, that it is folly not to engage an unmarried one if she is qualified in other respects. Because a woman has made one false step does not prove her wholly bad. We

must remember that we are not seeking examples of morality, or instituting rewards for virtue or punishment for crime, but are simply trying to obtain a suitable manufacturer of human milk where the child would suffer without. This remark applies, however, only as regards the first illegitimate child. A woman who has had more than one child illegitimately will probably be depraved in other respects and be unfit to be trusted. It is only through the danger of neglect, however, that the moral vices of a wet-nurse affect her foster child. There is no more probability of a baby imbibing the character of the nurse through the milk which she gives, much as we hear this talked about, than there is danger of a child learning to 'moo' because it is fed on cow's milk."

The wet-nurse should regulate her diet and her method of living in general according to the rules laid down for nursing mothers. She must be willing to eat, exercise and live so as to best fit her for nursing the child.

The baby's mother, however, should always supervise the wet-nurse in her management of the baby, no matter how trustworthy she may appear to be.

WEANING THE CHILD.

There comes a time when the baby must be weaned. The child gets to be too old to nurse at the breast, or it may be insufficiently nourished. The mother, moreover, may find nursing too irksome or injurious to her health; or for some other reason she may be unable to suckle the child. Where the employment of a wet-nurse is impossible or undesirable, the question of weaning the child must be considered.

Indications for Weaning the Child.—When the baby arrives at the age of ten or twelve months it should be weaned, the exact age depending upon circumstances. It

may nurse until it is a year old if it continue in the very best condition and the mother remain perfectly strong. As a rule, however, its health becomes impaired if it nurses longer on the breast milk, which by this time has become thin and poor.

If an infant does not grow properly, although perfectly healthy in every other way, if it tugs long and tenaciously at the breast, if it is unwilling to cease suckling after it should have finished, or if, after nursing for a considerable period, it drops the nipple with a dissatisfied cry, it very likely is receiving insufficient milk. When in the presence of any of these conditions, the various methods of modifying the milk already described and the adoption of mixed feeding have failed to increase the quantity of the milk, the child should be weaned.

Indications for Weaning in the Condition of the Mother.—Conditions in the mother may necessitate weaning. The nursing may render her life very much confined, may drain her system to a considerable extent and, in some instances, may injure her health. When the mother is ill, when her milk disagrees with the child, or when she becomes pregnant again, she must cease nursing the child. If her milk be rendered unfit for the child with the return of the menstrual period, as sometimes occurs, she must wean the child; otherwise and as a rule this is not necessary.

Methods of Weaning.—Whenever possible weaning is best done *gradually*. It is much better to accustom infants gradually to other food by means of mixed feeding than to take the mother's milk away suddenly. At first, the bottle may be substituted for the breast at but one of the feedings; but as time goes on, the number of bottles given daily instead of the breast is gradually increased. Then, in about a month's time, the child will be taking the bottle to the exclusion of the breast. In this way the child's

digestive system becomes gradually accustomed to the new diet.

The milk mixture in the bottle will be prepared according to methods described in the following chapter. In the latter months of infancy, however, it may be advisable to give full cow's milk, and the baby may be taught to drink from a glass or spoon, instead of from the bottle.

There are times when it is necessary to wean *rapidly,* as, for example, when the mother dies, or becomes sick, or suddenly loses her milk. Sometimes the baby refuses to take the bottle at all. The only way to wean a baby who, despite all efforts on the part of the mother, still refuses to take the bottle, is to withdraw it from the breast entirely and at once. If it gets nothing at all to eat except the bottle the child is finally forced by hunger to take it.

The mother needs to be looked after at the time of weaning, as well as the child, for she frequently suffers at this time from distended breasts. She should reduce the amount of liquids taken, whether water, tea, soup or milk, and she should take a gentle purgative. The breasts should be supported by one of the binders previously described, and when distended should occasionally be partially emptied with a breast pump.

The Time for Weaning. — The *best age* for weaning under ordinary circumstances is at ten or eleven months, the exact age depending upon circumstances. A few months earlier or later will not make very much difference.

The child should be weaned between the periods of dentition rather than when it is cutting its teeth.

The time of year is important. Weaning during the summer months should be avoided as much as possible. If the baby should reach its tenth or eleventh month during the hot weather it had better be weaned in the Spring or in the following Autumn.

CHAPTER XXV.

THE FEEDING OF INFANTS—Continued.

ARTIFICIAL FEEDING.

High mortality due to artificial feeding. Difficulty of providing a proper substitute for human milk. Substitutes for mother's milk. Composition of cow's milk. Modified cow's milk. The percentage modification of cow's milk. Milk laboratories. Home modification of cow's milk. Care and selection of the ingredients. Preparation of the baby's food. Sterilization and pasteurization. Mixtures for average infants at different ages. Frequency of feeding. Selection of bottle and nipple. Heating the Food. How to give the child the bottle. Care of the bottles and nipples. Peptonized milk. Condensed milk. Patent and proprietary foods. The feeding of older children.

"And he sucks his blessed bottle till it's drier than a bone—
Like his dad, 'e likes 'is bottle!—and 'e's all our very own."

—*Spurr.*

HIGH MORTALITY DUE TO ARTIFICIAL FEEDING.

THE infant who from birth has to be fed on the bottle is most unfortunate. There is nothing that can take the place of human milk. The high mortality of infants, especially in the summer time, usually results from artificial feeding. The fact that a baby is usually weaned after it is a year old is what makes its second summer such a proverbially dangerous period. The various digestive disturbances to which infants are so liable are due in the great majority of cases to improper methods of feeding and to experiments made for the purpose of determining what food is best for the baby. A uniform and definite method of feeding must be adopted from the first.

The most perplexing problem in a doctor's experience is that of providing a proper substitute for the mother's milk.

THE DIFFICULTY OF PROVIDING A PROPER SUBSTITUTE FOR HUMAN MILK.

There is no animal whose milk is exactly like that of the nursing woman. By modifying cow's milk we may make a mixture which will resemble human milk in its chemical composition, but not in its action on the baby. The individuality of the child is always a factor. What will nourish one may utterly disagree with another of the same age. Some babies can thrive on nearly anything; others have to be given food especially adapted to them. The artificial feeding of infants, consequently, instead of being a simple matter, becomes very complex. Of the different proprietary infant foods on the market, one will agree with some children and not with others. None of them is perfectly adapted to a baby's needs, and many are even harmful.

SUBSTITUTES FOR MOTHER'S MILK.

Of the domestic animals, the *milk* both *of the ass* and *of the mare* most nearly resembles human milk, but it can rarely be obtained and is apt to be very expensive. *Goat's milk* is more like that of the cow and has little advantage over it. The *milk of the cow* is the most easily procured, but in its natural state is unsuited to the baby's digestion. Therefore, before it can be given to the baby, it must be modified to resemble human milk by a method which will be described later. *Whey* is sometimes used as a food for infants. In only the rarest cases can *condensed milk* be employed. There are various *prepared foods* which may agree with certain babies. Finally, one of the various *proprietary*

foods in the market may be found just suited to an individual case.

THE COMPOSITION OF COW'S MILK.

Cow's milk differs in composition from human milk. Although having the same amount of fat, it contains much more proteid (4 per cent.) and less sugar (4½ per cent.). Cow's milk, moreover, is acid in reaction, while human milk is alkaline. The proteid in the cow's milk contains a great deal more casein, or cheese, than does human milk, causing the formation in cow's milk of large, thick, tough and firm curds, which are much less digestible than the fine, loose, small, floculent curds of human milk. Diluting cow's milk with water lessens the density and size of the curds.

MODIFIED COW'S MILK.

Cow's milk may be modified so as to resemble human milk. By diluting it with three times the amount of water the percentage of proteids is lowered from four to one, corresponding to that of human milk. This dilution, however, while making the proteid more digestible, lessens the percentage of all the other ingredients of the milk. The amount of sugar and fat is reduced to a point much below that required by the child. The deficiency in fat is made up by the addition of cream, which contains sixteen to twenty per centum of fat; that in sugar by the addition of sugar of milk, which, being an actual ingredient of milk, suits the child's digestion better than ordinary sugar or cane sugar. The reaction may be changed from acid to alkaline by the addition of lime-water or bicarbonate of soda.

In the process of milking, transferring the milk from one can to another, and transporting it, the milk becomes contaminated with bacteria or germs which cause disease or digestive disorders. These germs may be killed by heating

the milk by boiling or steaming. These processes are known as sterilization and pasteurization.

Modified Cow's Milk the Best Substitute for Human Milk.—Experience has shown that cow's milk, diluted with water and strengthened with cream and sugar and rendered alkaline with lime-water, agrees with delicate infants better than anything else.

The following formula makes a milk mixture resembling as closely as possible the chemical composition of human milk:

Milk	1	ounce.
Cream, skimmed (containing 16 per cent. fat)	2	ounces.
Or		
Cream, centrifugal (containing 20 per cent. fat)	1½	ounces.
Lime-water	½	ounce.
Milk-sugar	½	ounce.
Water sufficient to make	8	ounces.

But the fact that this mixture resembles human milk in its chemical composition, does not mean that it will necessarily agree with every child.

Some of the ingredients of cow's milk, as has been shown, are quite different from those of human milk. A newborn infant, for instance, cannot digest more than half of one per cent. of the proteid of cow's milk and may not even be able to digest that amount.

THE PERCENTAGE MODIFICATION OF COW'S MILK.

Importance of Percentage Feeding.—Children vary in their ability to digest the different constituents of the milk. One, as has just been said, may be unable to digest even one per cent. of proteids. Another may have difficulty in digesting fats. Especially is this true when the child is suffering from any digestive disorder. The percentage of

each ingredient, therefore, should be modified to suit the need of the individual child. This modification can be made only by the physician, and best by one who has devoted some study to the subject of infant feeding.

Milk Laboratories.—In many of the larger cities milk laboratories have been established, where infants' food is prepared accurately, with absolutely clean materials, according to the physician's prescription. The milk sold comes from special herds of healthy cows, and both animals and milk are so carefully handled that perfect cleanliness and purity are insured. The physician writes a prescription stating the percentage of fat, proteid and sugar desired. The bottles are then prepared by educated, intelligent men with the same accuracy that is observed by a pharmacist in compounding a prescription for medicine. Another advantage of the laboratory is that the strength of each ingredient is definitely known. Centrifugal cream or tested gravity cream and fat-free milk are employed.

HOME MODIFICATION OF COW'S MILK.

Milk laboratories exist only in some of the larger cities. Where they are not available and where their services cannot be afforded, the milk must be modified at home. Under these circumstances percentage feeding can still be carried on, the physician telling the mother the exact quantities of cream, milk and sugar to use in preparing the bottles.

Realizing that a physician may not always be available or may not be familiar with percentage feeding, the author will describe the method of preparing artificial food for the average child. It cannot be too strongly emphasized, however, that should the child not thrive, as evidenced by continuous loss of weight, or should it develop vomiting or diarrhea, a physician must be consulted without delay.

It is not always possible to get a good quality of cow's milk. Absolute cleanliness is necessary at dairy and shop.

CARE AND SELECTION OF THE INGREDIENTS.

The cow should be milked in a perfectly clean place by one who wears fresh, clean clothes, and whose hands have been thoroughly washed and dried with a clean towel. The udders of the cow and the milk pails should be scrupulously clean. The milk should not stand around the barn, but should be cooled rapidly and at once sealed in jars. In some cities certificates are issued to dairies which are especially careful about such matters. If milk be suspected, it should be sent to be analyzed by a chemist or by the State or municipal milk inspector; otherwise it is impossible to tell whether the milk has been watered, artificially colored, or mixed with some preservative.

It is necessary to know the percentage of fat in the cream used. The cream usually purchased contains sixteen per cent. fat. The formulas given in this chapter, consequently, will be based on a cream of that richness. It would be well in ordering cream to state the percentage of fat desired.

The milk should be skimmed before being used.

Only boiled water should be employed.

The sugar used should be the commercial milk-sugar bought at the stores. If ordinary granulated sugar or cane sugar—which is much less desirable—be employed, it should be used in about half the amount given for milk-sugar.

THE PREPARATION OF THE BABY'S FOOD.

All the bottles of modified milk required for the twenty-four hours are usually prepared at the same time.

The amount of the various ingredients and the size and number of the bottles required for infants at different ages are given later in this chapter.

On the arrival of the milk and cream in the morning the requisite amounts should at once be measured out and mixed with the water, in which the milk-sugar should first be dissolved. The lime-water or soda solution is then added unless the bottles are to be sterilized. The soda solution is made by dissolving a teaspoonful of bicarbonate of soda in a quart of water. If the bottles are to be sterilized, the lime-water must be added to each bottle just before it is given to the baby, as a peculiar chemical reaction occurs when sugar and lime-water are boiled together. As the soda solution is not affected by boiling, it can be added before sterilization.

The bottles, having been cleansed in the manner described on page 253, are then filled, each with as much of the mixture as will be required for one feeding. The mouths of the bottles are then carefully dried and plugged with raw absorbent cotton-wool.

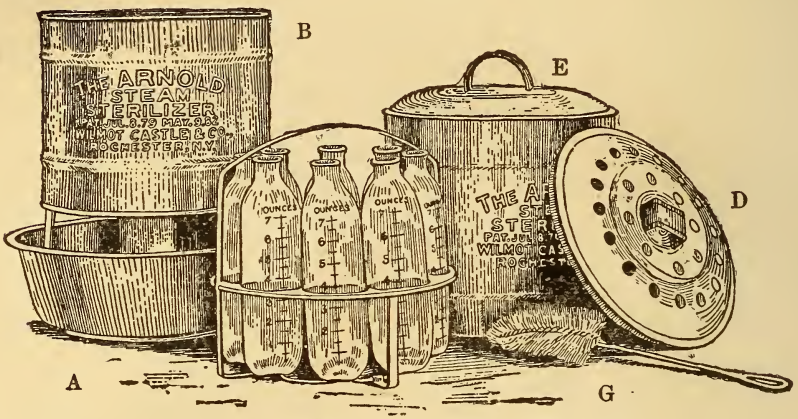
If the milk and cream are uncontaminated, owing to the great precautions taken to guard them, the mixture need not be sterilized or pasteurized, but may at once be put upon the ice. This is the preferable method, as heating injures the nutritive value of the milk.

As a rule, however, milk contains large numbers of injurious bacteria which must be killed by sterilization or pasteurization before the milk is given to a baby. This is the safest plan, being usually more necessary in hot weather, but especially in the presence of digestive disturbances.

STERILIZATION AND PASTEURIZATION.

Milk is sterilized when it has been subjected for at least ten minutes to the boiling temperature, 212° F. In pasteurization the milk is heated to 155° F. This latter temperature is sufficient to kill any harmful germs, while at the same time it does not injure the digestive qualities of the milk nor does it affect the taste.

Sterilization.—The milk may be sterilized before or after it is bottled. In the former case it is boiled in a vessel; in the latter, the bottles may be placed in boiling water or steamed in a farina kettle, but usually a special apparatus is employed.



THE ARNOLD STEAM STERILIZER.

The Arnold steam sterilizing apparatus (see figure) consists of a water reservoir (A), a sterilizing chamber (B), a bottle rack (C), a cover (D), a hood (E), eight graduated bottles (F), each holding a little over seven ounces, and a brush (G).

As soon as the bottles are stoppered they are placed in the bottle rack, which is then inserted in the sterilizing chamber, and the lid and hood are applied. The pan of the sterilizer is filled two-thirds full with water and the whole apparatus is placed on the hot stove for an hour.

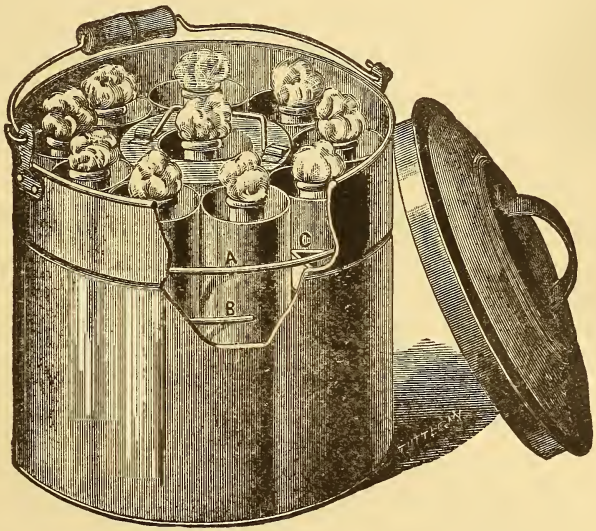
A home-sterilizer may be improvised out of a tin pail or can.

Pasteurization.—This is a more troublesome process than the one just described, unless a special apparatus,

EARLY GRACE AND BEAUTY.

Happy hours in the nursery or parlor, where children practice easy movements of body and limbs to music, do much to secure early grace and beauty in the full grown man or woman.

known as the Freeman pasteurizer, be employed. This apparatus consists of a pail for water and a receptacle for the bottles of milk. The pail is a simple one with a cover. Extending around the pail is a groove for indicating the level to which it is to be filled with water. Inside the pail are



THE FREEMAN PASTEURIZER.

three supports (C) for holding the receptacle. The receptacle for the bottles of milk consists of a number of hollow cylinders fastened together. Surrounding and binding together the group of cylinders is a wire (A). It is this wire (A) which rests on the support (C) when the milk is being heated. Below the wire (A) are three short wires (B). These wires (B) rest on the supports (C) when the receptacle is raised for cooling (see figure above).

If a thermometer be placed in one of the bottles and watched, so that it does not rise above 155° F., the Arnold

sterilizer may be used for pasteurizing, the hood being left off and the lid being set ajar. An inexpensive method is to place the bottles of milk in a dishpan or large saucepan of water, having a false bottom formed by laying inside the pan an inverted tin pie plate with holes punched in it. This is heated until a thermometer placed in the water registers 170° F., whereupon it is removed from the stove, covered with an old blanket and allowed to stand forty-five minutes.

After being sterilized or pasteurized, the bottles are at once put under the spigot and cooled rapidly with running water, after which they are placed upon the ice.

MIXTURES FOR AVERAGE INFANTS AT DIFFERENT AGES.

The only accurate and intelligent method of preparing mixtures to suit the needs of infants of different ages is by means of percentage modification of clean, pure cow's milk. The percentage of each ingredient must be altered as the child gets older and stronger and as its digestive ability increases. Below are given the prescriptions for the various ages of infants born at term and of normal development and weight. With the prescription is given the method for preparing the bottles at home. A child should be classed according to its weight rather than its age. The percentages, however, (which are those given by Rotch) are intended only to be provisional. They are meant for infants who digest well and gain progressively in weight. They will have to be further modified by the physician to suit the needs of children suffering from digestive disorders.

The quantities given are those required for the whole twenty-four hours' feeding. When but one bottle is prepared at a time, these quantities should be divided by the number of bottles which were to be filled with the mixture.

For the First Week of Life.—

℞ Fat ..... 2 per cent.
Proteids ..... 0.5 per cent.
Milk-sugar ..... 5 per cent.
Alkalinity ..... 5 per cent.

To obtain a mixture containing these percentages, and of a quantity just sufficient to make the number of bottles required:

Take of cream (16 per cent.) 1¼ ounces, milk ¼ ounce, milk-sugar ½ ounce, lime-water (or soda solution) ½ ounce, boiled water 8 ounces. Fill 10 bottles with 1 ounce each.

For the Second Week.—

℞ Fat ..... 2.5 per cent.
Proteids ..... 0.75 per cent.
Milk-sugar ..... 5.5 per cent.
Alkalinity ..... 5 per cent.

Take of cream (16 per cent.) 2½ ounces, milk 1 ounce, milk-sugar 1¾ ounces, lime-water (or soda solution) ¾ ounce, boiled water 10¾ ounces. Fill 10 bottles with 1½ ounces each.

The Third Week.—

℞ Fat ..... 3 per cent.
Proteids ..... 1 per cent.
Milk-sugar ..... 6 per cent.
Alkalinity ..... 5 per cent.

Take of cream (16 per cent.) 3¾ ounces, milk 2¼ ounces, milk-sugar 2¼ ounces, lime-water (or soda solution) 1 ounce, boiled water 13 ounces. Fill 10 bottles with 2 ounces each.

Four to Six Weeks.—

℞ Fat ..... 3.5 per cent.
Proteids ..... 1 per cent.
Milk-sugar ..... 6.5 per cent.
Alkalinity ..... 5 per cent.

Take of cream (16 per cent.) 4½ ounces, milk 1 ounce, milk-sugar 1¼ ounces, lime-water (or soda solution) 1 ounce, boiled water 16 ounces. Fill 9 bottles with 2½ ounces each.

Six to Eight Weeks.—

℞ Fat ..... 4 per cent.
Proteids ..... 1.25 per cent.
Milk-sugar ..... 7 per cent.
Alkalinity ..... 5 per cent.

Take of cream (16 per cent.) 5½ ounces, milk 2 ounces, milk-sugar 1½ ounces, lime-water (or soda solution) 1¼ ounces, boiled water 15¼ ounces. Fill 8 bottles with 3 ounces each.

Two Months.—

℞ Fat ..... 4 per cent.
Proteids ..... 1.5 per cent.
Milk-sugar ..... 7 per cent.
Alkalinity ..... 5 per cent.

Take of cream (16 per cent.) 5½ ounces, milk 4¼ ounces, milk-sugar 1½ ounces, lime-water (or soda solution) 1¼ ounces, boiled water 15 ounces. Fill 8 bottles with 3¼ ounces each.

Three Months.—

℞ Fat ..... 4 per cent.
Proteids ..... 1.5 per cent.
Milk-sugar ..... 7 per cent.
Alkalinity ..... 5 per cent.

Take of cream (16 per cent.) 6 ounces, milk 4½ ounces, milk-sugar 1½ ounces, lime-water (or soda solution) 1½ ounces, boiled water 16½ ounces. Fill 7 bottles with 4 ounces each.

Four Months.—

℞ Fat ..... 4 per cent.
Proteids ..... 2 per cent.
Milk-sugar ..... 7 per cent.
Alkalinity ..... 5 per cent.

Take of cream (16 per cent.) 5¼ ounces, milk 10½ ounces, milk-sugar 1½ ounces, lime-water (or soda solution) 1½ ounces, boiled water 14¼ ounces. Fill 7 bottles with 4½ ounces each.

Five Months.—

℞ Fat ..... 4 per cent.
Proteids ..... 2 per cent.
Milk-sugar ..... 7 per cent.
Alkalinity ..... 5 per cent.

Take of cream (16 per cent.) 5½ ounces, milk 11 ounces, milk-sugar 1¾ ounces, lime-water (or soda solution) 1¾ ounces, boiled water 14¾ ounces. Fill 6 bottles with 5½ ounces each.

Six Months.—

℞ Fat ..... 4 per cent.
Proteids ..... 2.5 per cent.
Milk-sugar ..... 7 per cent.
Alkalinity ..... 5 per cent.

Take of cream (16 per cent.) 4¼ ounces, milk 17¼ ounces, milk-sugar 1½ ounces, lime-water (or soda solution) 1¾ ounces, boiled water 11¼ ounces. Fill 6 bottles with 5¾ ounces each.

Seven Months.—

℞ Fat ..... 4 per cent.
Proteids ..... 2.5 per cent.
Milk-sugar ..... 7 per cent.
Alkalinity ..... 5 per cent.

Take of cream (16 per cent.) 4¾ ounces, milk 18¾ ounces, milk-sugar 1¾ ounces, lime-water (or soda solution) 2 ounces, boiled water 12 ounces. Fill 6 bottles with 6¼ ounces each.

Eight Months.—

℞ Fat ..... 4 per cent.
Proteids ..... 2.5 per cent.
Milk-sugar ..... 7 per cent.
Alkalinity ..... 5 per cent.

Take of cream (16 per cent.) 5¼ ounces, milk 21 ounces, milk-sugar 2 ounces, lime-water (or soda solution) 2 ounces, boiled water 13¾ ounces. Fill 6 bottles with 7 ounces each.

Nine Months.—

℞ Fat ..... 4 per cent.
Proteids ..... 3 per cent.
Milk-sugar ..... 7 per cent.
Alkalinity ..... 5 per cent.

Take of cream (16 per cent.) 3½ ounces, milk 28 ounces, milk-sugar 1¾ ounces, lime-water (or soda solution) 2 ounces, boiled water 8½ ounces. Fill 6 bottles with 7 ounces each.

Ten to Ten and One-half Months.—

℞ Fat ..... 4 per cent.
Proteids ..... 3.25 per cent.
Milk-sugar ..... 5 per cent.
Alkalinity ..... 5 per cent.

Take of cream (16 per cent.) 2¾ ounces, milk 31¾ ounces, milk-sugar ¾ ounce, lime-water (or soda solution) 2 ounces, boiled water 6 ounces. Fill 5 bottles with 8½ ounces each.

Ten and One-Half to Eleven Months.—

℞ Fat ..... 4 per cent.
Proteids ..... 3.5 per cent.
Milk-sugar ..... 4.5 per cent.
Alkalinity ..... 5 per cent.

Take of cream (16 per cent.) 2 ounces, milk, 35 ounces, milk-sugar ¾ ounce, lime-water (or soda solution) 2 ounces, boiled water 3½ ounces. Fill 5 bottles with 8½ ounces each.

Babies Over Eleven Months.—Unmodified cow's milk and cereals, shown on page 256.

FREQUENCY OF FEEDING.

The number of times a baby is fed in the twenty-four hours depends upon its age and size.

First Four Weeks of Life.—During the first two days after birth an infant is fed not oftener than four or six

times in the twenty-four hours. From the second day to the end of the fourth week it is fed every two hours between six in the morning and ten at night, and once during the night, about 4 A. M.

Fifth and Sixth Weeks.—The baby is fed every two hours between seven in the morning and ten in the evening, and once during the night, about 3 or 4 A. M.

Sixth Week to the End of the Third Month.—The child is fed every two and a half hours during the day between six and ten, and once at night, at 3 A. M.

Fourth and Fifth Months.—The baby is fed every two and a half hours during the day, but is not fed during the night after ten o'clock.

Fifth Month to the End of the Ninth Month.—The child is fed every three hours during the day and not at all during the night.

Ninth Month to One Year.—The child is fed every three hours, but is only given five bottles during the day and none at night.

SELECTION AND CARE OF BOTTLE AND NIPPLE.

The Bottle.—An ordinary nursing bottle, or the bottles that come with the pasteurizing apparatus, may be used. The bottle should be made smooth inside, without angles or depressions, so that it may be easily cleansed.

As soon as the child has finished, the bottle must be taken away, emptied of any milk that may remain, rinsed well and placed in a strong solution of washing soda and water. Every evening the bottles should be removed from this solution and scrubbed inside with a bristle brush. In the morning, just before being filled, they should be boiled.

The Nipples.—There should be at least two conical rubber nipples, preferably of black rubber. The hole should be of such a size that when the bottle is inverted the milk

drops easily from it but does not run too fast or in a stream. The nipple should be dipped for a moment in hot water before being used. The form of nipple which is attached to the bottle by a long rubber or glass tube should never be used, as it is impossible to keep the tube clean.

The nipple should be removed from the bottle immediately after nursing, scrubbed thoroughly with a soft bristle brush at first outside and, after being inverted, inside as well. It should then be placed in a solution containing half an ounce of boric acid to a pint of water and kept there until used again. Once a day all the nipples should be boiled for five minutes in water containing a little table salt. An infant should not be given a nipple to suck, as it may fill its stomach with wind and suffer from colic in consequence.

HEATING THE BABY'S FOOD.

When the bottle containing the modified milk has had the cotton plug removed and the nipple fitted on, it should be heated before being given to the baby. This is done by setting the bottle in a cup, or preferably in a small, narrow, cylindrical vessel, about three inches in diameter, just high enough to reach to the neck of the bottle, and having a perforated false bottom. The receptacle should contain cold water, which is heated until the contents of the bottle are at a temperature not exceeding 95° to 100°. If the bottle is put directly into hot water, it is liable to crack.

HOW TO GIVE THE CHILD THE BOTTLE.

The baby may lie upon its back when taking the bottle, or it may be held in the arms as described in the preceding chapter. The bottle should be held by the nurse, who must see that the neck is always full of milk. When the nipple collapses, its edge should occasionally be lifted from the bottle to allow the air to enter. The baby should take about

ten minutes or more to its bottle, with slight rests now and then.

HOW TO PREPARE PEPTONIZED MILK.

When the infant's digestive power fails, owing to illness or other causes, the milk may have to be peptonized. This is done in the following manner when unmodified cow's milk is used:

To four tablespoonfuls of cool, boiled water add the contents of one Fairchild's peptonizing tube, stirring until it is dissolved. Add this to one pint of cool milk and put the vessel containing the mixture into water of a temperature of 115° F., where it should remain for ten minutes, or for a shorter time if the slightest bitter taste develops. It is then either put on ice at once or quickly boiled.

When a milk-mixture is used the peptonizing powder is added in the proportion of one tube to each sixteen ounces of combined milk and cream.

PATENT AND PROPRIETARY FOODS.

There are a great number of these foods on the market. They contain too little fat and too much sugar, and often contain starch. They are seldom reliable. Most of them are unsuited to a young baby, but occasionally one may be used to advantage. Experimenting is dangerous; the advice of an experienced physician should always be sought.

THE RESULTS OF FEEDING WITH CONDENSED MILK.

There are three forms of condensed milk: (1) condensed unsweetened whole milk, (2) condensed sweetened whole milk, and (3) condensed sweetened skimmed milk. Of these, the second and third forms should never be used and the first but rarely. When diluted according to the directions, they contain too small a percentage of fat, less than one per cent. On the other hand they contain too much sugar.

Many children are starved on condensed milk. Others fed on this milk may appear plump, but are usually found to be pale and flabby, lacking power to resist disease and being especially liable to develop rickets and scurvy. Once in a great while, however, a child will be found who thrives best on condensed milk.

THE FEEDING OF OLDER BABIES.

It is important to know what is the proper food for older infants. Professor Rotch, of Harvard University, feeds them in much the following manner:

Eleven to Twelve Months.—At this age cereals, such as oats, barley and wheat, may be added to the baby's bottle in the form of a jelly, which is prepared as follows: Six ounces of oat flour (or barley flour or wheat flour) is put into one quart of water, and the whole is boiled for twenty minutes. Enough water is then added to replace what has evaporated. The mixture, while hot, is then strained through a thin white cloth, making a very thick jelly.

One Year to Thirteen Months.—After it is a year old, the baby should be gradually accustomed to taking its food from a spoon. For some months still, however, a bottle may be given at night and before the morning nap. An infant of this age should have five meals during the day, arranged in the following manner:

For *breakfast,* bread and cow's milk, slightly warmed.

For *lunch,* equal parts of oat jelly and cow's milk, warmed, with a little salt added according to the infant's taste.

In the *middle of the day,* broth of some kind, either chicken or mutton, can be given with some bread.

To prepare the broth, a fowl weighing about three pounds (or a shoulder of lamb or mutton weighing from five to seven pounds) is boiled for two hours with two ta-

blespoonfuls of rice, two quarts of cold water, and salt and pepper. When the fluid has boiled down to one quart it is strained, while hot, through a fine sieve.

In the *middle of the afternoon* the meal of oatmeal jelly, as given for lunch, is repeated.

The *fifth meal,* given in the latter part of the afternoon, should consist of bread and milk.

Fourteen to Fifteen Months.—Some thoroughly boiled rice may be added to the broth in the middle of the day.

A baked apple or apple sauce or a ripe peach may be given at the evening meal.

Sixteen Months.—The infant can now have a small amount of butter on its bread.

Seventeen to Eighteen Months.—At the mid-day meal the child may have a thoroughly baked white potato mixed with butter and salt.

Eighteen Months to Two Years.—Griffith suggests the following list as a guide to the diet of babies of this age. Several different menus are given, each numbered, so that a mother may have a choice and can so alternate them that the child will not tire of any:

Breakfast, 7 A. M.—(1) A glass of milk with a slice of bread and butter or a soda, graham, oatmeal or similar unsweetened biscuit; or (2) A soft-boiled egg with bread and butter and a glass of milk; or (3) Porridge made of oatmeal, arrowroot, wheaten grits, hominy grits, etc., or one of the numerous good breakfast foods on the market.

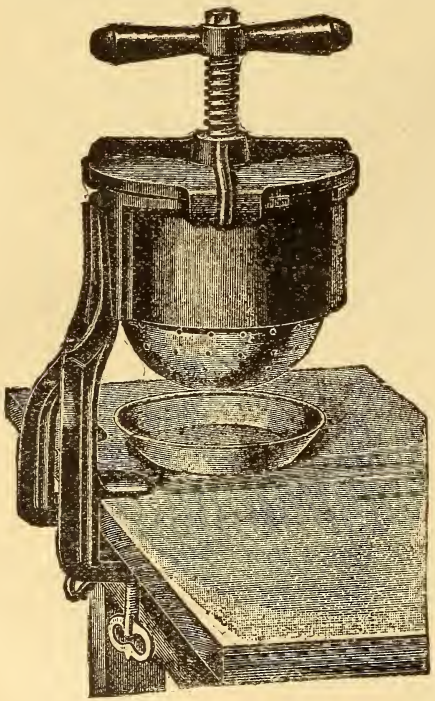
Second Meal, 10 A. M.—(1) Bread broken in milk; or (2) Bread and butter or a soda or other biscuit with a glass of milk.

Dinner, 2 P. M.—(1) Boiled rice or a baked potato mashed and moistened with dish-gravy (no fat) or beef juice made as stated later, a glass of milk; or (2) Mutton or chicken broth with barley or rice in it, some bread and butter and some sago or rice pudding made with milk; or (3) A small portion of minced white meat of chicken or turkey, or minced rare roast beef, beefsteak, lamb, mutton or fish, bread and butter, a glass of milk.

Fourth Meal, 5 P. M.—(1) Bread and milk; or (2) Bread and butter and a glass of milk.

Fifth Meal, 9 to 10 P. M.—It is probable that no fifth meal will be needed, but if it is, it should consist only of milk.

To Make Beef-Juice.—Cut into rather thin pieces and very slightly broil one pound of round or tenderloin steak free from fat. Then cut into smaller pieces and express the juice with a lemon-squeezer or, much better, with one of the meat-presses to be bought at the shops. Season with salt. The pound of meat will give from three to six ounces of beef-juice or thereabouts. After it is obtained, the juice can be warmed only slightly or it will coagulate. It may be given cold if desired. Occasionally infants prefer it sweetened.



A Meat-Press.

Another method recommended, when a lemon-squeezer or a press is not at hand, is the following: Broil one pound of beef as before, then chop very fine, place in a jar, add four ounces of water, stir thoroughly, stand on ice for six or more hours. Strain through cheesecloth or muslin by twisting this hard. This method gives probably twice as much juice as the first.

Two to Three Years.—The diet at this age may be as follows, according to Griffith. His tables are only a guide, not an absolute rule, both as to the time of meals and as

EXERCISE IN THE NURSERY.

Children should exercise if they are to grow big and strong. For this purpose "the game of under and the game of over," shown here, is very attractive. See chapter in this volume on exercises.

to the nature of the food; they represent the extreme of what a child can take rather than indicate what every child ought to have.

Breakfast, 7 to 8 A. M.—(1) A small portion of beefsteak, with oatmeal, hominy grits, wheaten grits, cornmeal or other cereal porridge, and with plenty of milk; or (2) A soft-boiled egg, bread and butter and a glass of milk.

Second Meal, 11 A. M.—(1) A glass of milk with bread and butter or with a soda or other biscuit; or (2) Bread and milk; or (3) Chicken or mutton broth.

Dinner, 2 P. M.—Roasted fowl, mutton or beef, cut fine; mashed baked potato with butter or dish-gravy on it; bread and butter. As dessert, tapioca, sago or rice pudding, junket or fresh or stewed fruits in small quantity, including raspberries, strawberries, grapes freed from the seeds, peaches, juice of oranges, and stewed apples. Bananas should not be given. Indeed, the use of orange juice or of some cooked fruit is often advantageous before this age, especially if there is any tendency to constipation.

Supper, 6 P. M.—(1) Bread and butter; or (2) Milk with soda or similar biscuit, or with bread and butter.

CHAPTER XXVI.

BATHING THE BABY.

The New-born Infant's First Bath. Removing the vernix caseosa. Articles needed for the bath. The preparation of the bath. Rules for bathing the baby. How to bathe an Infant. Rinsing and drying the baby. Care of the Hair and Scalp. Cleansing the Parts After a Bowel Movement. Bathing Older Children. Sea Bathing for Children. Care of the nose.

"Cleanness of body was ever deemed to proceed from a due reverence to God."—*Bacon.*

THE NEW-BORN INFANT'S FIRST BATH.

REMOVING the Vernix Caseosa.—The new-born infant is covered with the waxy substance known as the vernix caseosa, described in Chapter XXIII. This must be removed before the child can be bathed; consequently before the first bath is given the infant should be gently but thoroughly rubbed all over with olive oil or purified white vaseline or washed unsalted lard or white of egg. It is then bathed in the manner described below, after which the bow knot on the string around the umbilical cord is slipped and the ends are again tied tightly around the cord in a final permanent knot. This is done on account of the shrinkage the cord undergoes during the first bath.

Articles Required for the Bath.—There are certain articles one must have at hand before beginning the baby's toilet. In addition to the baby's basket and its contents, which have been described in Chapter XIX, the following articles are needed for the daily bath: A tub, which may

be made of tin, porcelain, copper, iron or rubber; a low stand for the tub; a china basin; a bath thermometer; a rubber cloth or an oil cloth, which is to be laid beneath the tub; a low chair with a broad seat; a rubber apron; a bath-apron consisting of two long and broad pieces of soft

Thermometer for the Bath.

white flannel sewed together above or, better still, attached to a waist-band, one in front of the other; a piece of good soap—imported castile or palm oil; two wash-rags, which may be made of soft flannel or of old diaper cloth; a large, fine, soft sponge; two large towels of some fine absorbent material, which should be warm and dry; and a simple dusting powder, such as ordinary talcum powder.

The Preparation of the Bath.—The water in the baby's bath should be soft and clear. The bath tub should be filled to such a height that the semi-reclining baby is covered up to the neck. For a new-born infant the temperature of the water should be 100° F. When the baby has reached the age of six months it should be bathed in water at a temperature of 90° to 95° F. in the winter-time, and 80° to 85° F. in the summer-time. When the hardening effects of a cold bath are desired the temperature should be regulated as described in Chapter II.

Rules for Bathing the Baby.—There must be a regular time for the bath. The best hour is about ten o'clock in the morning, midway between two feedings. The child should not be bathed when it is cold or overheated, or immediately after a meal. The bath should be given in the warmest part of the room, before a fire, if possible, and in a position where there is no danger from draughts. A

screen placed around the chair and tub may serve to keep away draughts.

How to Bathe an Infant.—The mother or nurse, wearing the rubber apron and over this the bath apron, sits upon the low chair with the tub in front of her. The baby is undressed and wrapped in the outer fold of the bath apron. Its face, with the exception of the ears, is then washed with water and a soft wash rag which must be used exclusively for this purpose. No soap should be used on the face. The mouth is cleansed by means of a little moistened absorbent cotton or a moistened square of muslin wrapped around the little finger or around the end of a smooth stick, and projecting well beyond it. When the teeth have been cut they should be rubbed with a moistened cloth and later with tooth powder, which may be applied by means of a soft, fine stick sharpened into a chisel-shaped edge. The eyelids are separated and a little warm water is allowed to fall on them, or the eyes may be washed with a fresh piece of absorbent cotton. The ears are then carefully gone over with a dampened wash cloth. The second wash cloth being brought into service, the whole body, including the scalp, is bathed with soap, particular attention being paid to the arm-pits, the groins and the parts between the folds of the buttocks.

Rinsing and Drying the Baby.—The nurse then picks up the child so that its head and back are supported by her left arm and hand, in which position she lowers it gently into the tub until it is submerged up to the neck, being careful not to allow the head to dip under the water. The child remains in the tub from one to five minutes, during which time it is washed and douched with the sponge. Sometimes after this the child is rubbed all over very rapidly with cold water. In many cases, however, this is omitted. The child is lifted into the lap and enveloped in

a towel or in the dry folds of the bathing apron. It is then patted thoroughly dry, but is not rubbed with the towel. The nurse, with the palm of her hand, then rubs the baby gently all over until the skin is slightly reddened, rubbing especially each side of the spine. After this it is customary, though not absolutely necessary, to powder the folds of the skin, the child being then quickly dressed.

Care of the Hair and Scalp.—The baby's hair should be brushed with a camel's hair brush; no comb should ever be used. After the baby is six months old the scalp is not to be included in the general sponging oftener than twice a week.

Cleansing the Parts After a Bowel Movement.—After each bowel movement the lower parts of the baby's body should be sponged with warm water, but without soap, and then carefully dried. When chafing occurs the parts should be gently cleansed with starch-water and dried with a soft, clean towel, after which they may be dusted with ordinary talcum powder or with a mixture consisting of powdered camphor 90 grains, powdered zinc oxide ½ ounce and powdered starch 1 ounce.

BATHING OLDER CHILDREN.

After a child is three years of age it should be given a sponge bath every morning. The temperature of the water at first may be 75° F. in the summer or 85° F. in the winter. It then may be gradually reduced to 60° F. or to the temperature of the water as it flows from the faucet. The skin should be dried with a soft towel and afterwards rubbed with the open hand until it glows, or the friction may be applied by means of the towel. The whole process should not last longer than five or ten minutes. This bath is given for its hardening effects, as described in Chapter II. At the same time three warm, full

baths a week are required for cleanliness, and are given preferably in the evening.

When the child grows older he learns to wash himself. He should take a cold sponge or plunge bath immediately after rising, and in addition should always take a warm cleansing bath once a week. The latter is best taken before going to bed and should not occupy more than ten minutes; it should be followed by a cold shower or a rapid cold sponge.

SEA BATHING FOR CHILDREN.

To carry a small, terrified child into the ocean is unwise as well as cruel. It is better to gradually accustom the child to the water. A child of three years of age or even younger may be dressed in a bathing suit and allowed to play on the beach and splash in the shallow water. An older child may enter the surf after wetting its head. If the weather be cool, ten minutes is long enough for the bath, although if the weather be warm, twenty to twenty-five minutes is not too long, provided the reaction is good. A child should come out of the water at once, however, at the first indication of chattering of the teeth or blueness of the lips. If the child seem exhausted or listless after the bath he must go into the water less frequently and remain for a shorter time. Under no circumstances should the surf bath be taken oftener than once a day. No one should enter the water when cold or perspiring, or until three hours have elapsed after a meal.

CARE OF THE NOSE.

It is necessary to teach a child to keep its nose clean. In blowing the nose it should be taught not to compress the nostrils and not to blow with much force, as ear trouble is thereby frequently produced. If the nose seems stopped up it may have to be sprayed with a disinfectant solution.

CHAPTER XXVII.

CLOTHING FOR THE INFANT AND THE CHILD.

Dressing the Infant: Character of the infant's clothes; the baby's binder; the diapers; the infant's shirt, petticoat, dress, socks, night-clothes and other garments. The Baby in Short Clothes: Stockings, drawers, diaper-supporters, foot-gear, bibs, creeping-aprons, outing clothes, night slip, wrapper. Children's Clothing: Underwear, outer garments, shoes, clothing for out-of-doors, night attire.

"On parent knees, a naked, new-born child,
Weeping thou sat'st while all around thee smiled."
—*Jones.*

THE clothing required for the infant, for the older baby and for the full-grown child have so many points of difference that each will be treated separately.

DRESSING THE INFANT.

The various principles in regard to articles of apparel laid down in Chapter V apply to children as well as to adults; there is no difference in the objects for which clothes are worn and the conditions they must fulfill.

Character of the Infant's Clothes.—For a baby's clothes wool is the best material, and all the garments that come next to the skin, with the exception of the diapers, should be made of it, the weight of course varying with the season. When wool cannot be worn the clothes may be made of merino, which contains only a small portion of wool, or of a machine-knitted cotton goods known as stockingette. Constriction is to be avoided; the clothes must be loose and

allow sufficient freedom of motion As the baby's skin is very delicate and easily irritated, it is necessary that the clothing be soft both in surface and texture.

A list of the clothes required for an infant has been given in Chapter XIX on "Preparations for the Confinement."

The Baby's Binder.—The best form of the abdominal binder is a circular band of knitted wool, made, as a rule, with shoulder straps and with a little tab in front to be fastened to the diaper. Another kind consists of a strip of soft flannel twenty inches in length, cut bias, which is usually fastened to the shirt. The binder should extend from the hips to the lower ribs. It is used at first as a protection for the umbilical cord and later as a covering for the abdomen to prevent chilling. It must not be so tight that the ribs and abdomen are compressed, but should be loose enough for the hand to slip under it easily.

The Diapers.—The diapers or napkins should be made of linen or cotton, not of canton flannel. They should never be covered with water-proof material. For an infant at birth they should be about a yard long and half a yard wide, but as the child gets older they have to be made larger. Every time it is soiled, even if only with colorless urine, the diaper must be changed. It should be washed with pure soap, without soda, and thoroughly dried before it is again applied.

The Infant's Shirt.—The shirt may be of flannel, merino or soft worsted yarn, the weight varying with the season. It should be made loose, with a high neck and long sleeves, and of a sufficient length to reach below the hips, where it is pinned to the diaper. Every part of the child must be protected from exposure; chilling of the arms is often sufficient to cause pneumonia or diarrhœa. The shirt may be open its whole length in front, being fastened by small, flat

THE LITTLE MOTHER—A HEAVY RESPONSIBILITY.

The older children are often a great help to the busy mother. The responsibility of an older daughter, as she takes the mother's burden, has its reward in the love of the little sisters and brothers.

buttons, or it may be open just at the neck where it is fastened with tape or buttons.

The Petticoat.—The petticoat should be of white flannel, made in Princess style and either fastened in the back with one or two flat buttons or tied at the neck with a narrow ribbon. It should never be so long as to reach six to ten inches below the body, for then it prevents the child moving its legs freely.

The Infant's Dress.—The simpler the dress is made the less will be the discomfort the baby is subjected to while being dressed and undressed, and the less will be the temptation to allow the garment to be worn too long without washing. The dress or slip may be made of cambric or nainsook. It should be a little longer than the petticoat and fastened behind with buttons or with a narrow ribbon. The sleeves should be long. In the Gertrude suit the shirt, petticoat and dress are made so that they are put on together.

The Baby's Socks.—The baby's socks should be crocheted or knitted of silk or soft, fine yarn. They should reach fully half way to the knee, where they may be held in position by a loosely-knitted ribbon, tape or cord, or by a narrow band of stitches.

An Infant's Night Clothes.—At night an entirely different set of clothes must be worn, consisting of a binder, a diaper, a shirt and a long and roomy night slip. This last should be made of muslin in the summer, but in the winter is best made of canton flannel with a drawing string at the bottom.

Other Garments Needed for the Baby.—In addition to its regular indoor clothes the baby will need a soft, warm flannel or woolen shoulder blanket, a cambric or silk cap or hood, a knitted or woolen sack, a flannel or wash-flannel wrapper, and also in the winter a long, warm cloak or coat,

a warm, thick hood or cap, a Shetland veil and thick, warm mittens.

When the Baby Discards Long Clothes.—The baby wears long clothes for the first six months of its life, after which time, unless it be winter, it should be put into short clothes.

THE BABY IN SHORT CLOTHES.

Practically the only difference between short clothes and long clothes is in the length, the former ending a short distance below the knees and thus leaving the legs exposed. Short clothes may be made from the garments that have been worn since birth by cutting down the skirts, lengthening the sleeves and letting out the waists.

Stockings.—It is dangerous to allow the child's legs to be bare even in the summer-time. The baby should wear long, smooth, roomy stockings, covering both the leg and the thigh. They may be fastened to the diaper or to a waist or diaper suspender, or may be attached to the petticoat by means of elastic bands.

Drawers.—Woolen, merino or canton-flannel drawers are of advantage in the winter. They are best made in two pieces, which should fit close and should reach to the shoe tops, being fastened or pinned to the waist of the petticoat. When these are worn there is not such a necessity for having long stockings; short stockings may be worn instead.

Diaper-Supporters.—As the diapers have a tendency to fall off when the child begins to creep and stand, they should be fastened to little squares of muslin sewed on the shirt, or to the tab on the abdominal binder. Another way to support them is by means of diaper suspenders. This consists of a band of muslin three inches wide fastened around the waist and provided with silk elastic shoulder straps. A little tab is sewed to the front of the band and another at the back; to these the diaper is pinned. Instead

of suspenders, a light waist may be worn, to which not only the diaper but also the stockings and skirts may be fastened, the skirts themselves in that case being made without waists.

The Baby's Foot-gear.—Moccasins form an excellent covering for the feet before the baby begins to stand or creep. They may be made of chamois, leather, kid or felt. The first shoes a baby wears should be made of soft kid, with the soles also of kid or fine leather, and without heels. They should be somewhat longer than the foot and fully as wide. They should be made rights and lefts, and should lace rather than button.

Bibs.—As the baby slobbers a great deal at this time, owing to the increased flow of saliva, it should be provided with bibs. These are made of soft, absorbent cotton material.

The Creeping Apron.—When the baby begins to creep about it will need a creeping apron. This consists of a wide, roomy, bag-like skirt large enough to hold the skirts easily, and closed at the bottom, with the exception of two openings, which are finished with bands or cuffs made to extend below the knees. The width of the skirt at the bottom should be twenty-seven inches or more, the distance between the openings for the legs being fifteen inches. The apron may either be fastened above to a yoke which is provided with wide sleeves and wide armholes to permit the arms to slip into them easily or it may be gathered above into a band to which shoulder straps are attached.

Outing Clothes.—The baby will need a shorter coat when it goes out, and in cold weather should have the whole lower half of the body covered with warm leggings, either knitted or made of jersey.

The Binder, Night Slip and Wrapper.—While in short clothes the baby continues to wear the binder. During this

time the night slip and the wrapper should still be long and loose, not taking part in the general shortening.

CHILDREN'S CLOTHING.

As soon as the baby learns to do without a diaper it can discard the clothing of infancy. This stage is usually reached by the time a child is a year old, although it may occur earlier; on the other hand, it may be postponed to the end of the second year. The binder should be worn until the child is two years of age.

A Child's Underwear.—The underclothing the whole year around should be of wool or merino, the thickness varying with the season. A change from heavy to light garments, however, should not be made until the hot weather has set in permanently. No part of the body, with the exception of the head and hands, should be left exposed to the air; consequently the underclothes must be made with high necks and long sleeves and legs. Short muslin drawers may be worn over the under-drawers, being attached to the waist. A white skirt is worn throughout the year, but during the winter the child must wear a flannel skirt in addition. The skirts may be fastened to the waist, or they may have muslin waists of their own.

The Outer Garments.—The outer garments should be loose and warm, the material and pattern being in accordance with the season and the prevailing style.

A Child's Shoes.—The shoes should be made heavier and decidedly thicker at the heel when the child begins to walk. An actual heel, however, should not be worn before the sixth or eight year.

Clothing for Out-of-Doors.—In the winter-time for out-of-doors the child will require a heavy wrap or overcoat, a heavy cap or hood, mittens and leggings. These should be put on just before the child goes out and taken off im-

mediately upon coming in. Rubber coats, overshoes and boots must also be removed as soon as possible. When gum boots have been taken off, the feet and legs should be uncovered and rubbed with a coarse towel until the skin is red, after which dry stockings should be put on.

Night Attire.—A light, high-neck, long-sleeved merino shirt should be put on at night after the removal of the clothing that has been worn during the day. The child should then be dressed in night drawers, which in winter-time should be made of canton flannel or cotton stockingette and provided with feet, but which in summer may be made of muslin, cambric or outing flannel, without feet. Later, as they increase in age, girls may wear night-gowns and boys may wear night-shirts or pajamas.

CHAPTER XXVIII.

THE BABY'S SLEEPING HOURS.

Amount of sleep required. Regularity in sleeping hours. Baby's position when sleeping. Time for sleeping. Preparing baby for bed. The awakening in the morning. Ventilating the baby's sleeping room. The baby's bed: bassinet, cradle, crib, clothes-basket. How to make the baby's bed. How to keep on the covers. Care of the bed. Keeping the air of the sleeping room pure.

"He smiles, and sleeps!—sleep on
And smile, thou little young inheritor
Of a world scarce less young; sleep on, and smile!
Thine are the hours and days when both are cheering
And innocent!"

—*Byron.*

AMOUNT OF SLEEP REQUIRED BY BABY AND CHILD.

THE greater part of the early life of the healthy infant is spent in sleep. If a baby is fretful and does not sleep, one of two things is usually the matter: Either it is not well, or else it has been badly trained. For *the first few months* a normal baby should sleep eighteen or twenty hours a day. In fact, during the week or so after birth it will sleep almost all of the time and rouse only when nursed or bathed. As the baby grows older, it will awaken more frequently and for longer periods. If the baby is to grow up strong and healthy, it must have sufficient sleep. Mothers are often uninformed as to the number of hours which, at the different ages, babies ought to spend in sleep. Through ignorance they try to entertain and amuse the little one at a time when it should be taking its nap.

Children *a year old* require fifteen or sixteen hours of sleep every day; *between two and three years* they should sleep twelve or thirteen hours out of the twenty-four; at *four or five years* they need ten or eleven hours of sleep. Even when children reach the age of *twelve or thirteen* years they require nine or ten hours of sleep.

REGULARITY IN SLEEPING HOURS.

A baby properly trained rarely needs to be rocked to sleep; it will fall to sleep of its own accord when put to bed.

Walking the floor with a healthy child, holding it in the arms, patting, rocking and singing to it are absolutely unnecessary; they give evidence of faulty training. A little firmness in the first few days of the infant's life will save the mother or nurse hours and days of misery and martyrdom. The training cannot begin too early. The infant must be put to bed at definite hours, and the hours must never be varied. This will develop a habit of regularity in sleeping.

When the hour for sleep arrives the baby should be put to bed and left there. Unless sick, it should not be taken up again to be soothed to sleep by patting, singing, rocking or walking. It is best that no one sit in the room with the child. At first the angry infant will cry loudly, whereupon the loving and tenderhearted mother will naturally long to take it in her arms until it is quieted. But if she yield once, she must be prepared to have this happen every time the child is put to bed. If, on the other hand, she persist in her determination not to go near her baby, she will find that after a while it will drop off to sleep.

Having once learned its lesson, the baby will always go to sleep without any difficulty, provided it never knows any other way than this of being put to sleep. But should it ever learn that merely by crying it can have itself rocked

and sung to, it will take advantage of this knowledge at every opportunity.

THE BABY'S POSITION WHEN SLEEPING.

At birth, and for several days after, the baby should lie on its right side. This position aids certain changes which the child's heart undergoes when it takes on the work of pumping the blood, which before birth was done by the mother's heart. After the first few days of life it is immaterial what attitude the child assumes in bed; it may lie on its back, on either side, or on its stomach. It should not, however, remain in one position too long. When, therefore, the baby is too young or too feeble to move of its own accord, it should now and then be taken up by the mother and put down in a slightly altered position.

TIME FOR SLEEPING.

It is necessary not only that the child sleep a certain number of hours each day, but also that the sleeping hours be properly apportioned. There must be a definite time for going to bed, for getting up in the morning, and for taking the nap.

For the *first three or four months* the baby should be put to bed at half past five or six o'clock. It should not be roused more often than once or twice during the night, and must sleep undisturbed for six full hours. In the early weeks it is allowed to sleep during the day as much as it will; but after it is a month old, if it is kept awake for about an hour previous to its bed time, it will be sure to have a better night's rest. When the infant is *between four and six months* of age it should be put to bed at six or seven in the evening, and sleep until six or seven in the morning. It may be awakened and fed at nine or ten

THE GOOD DOCTOR AND HIS LITTLE PATIENT.

Though the little life is saved through the devoted doctor's skill, the flame for awhile flickers low, and the parents' anxiety is shown in the grief-lined face of the father and in the sobbing mother.

P. M., but must not be taken up at any other time, so that it may become trained to awakening but once during the night.

A child who is *between six months and a year* old should sleep from six or seven in the evening to six or seven in the morning, without being roused for feeding. It does not sleep so much now during the day, but should have a nap in the morning and may have another in the afternoon. The morning nap should last from one and a half to two hours. The time of day selected will depend largely upon the hours of feeding, which must not be interfered with, and upon the convenience of the mother, who may have other duties in addition to caring for the baby. If an afternoon nap be required, it should be over by four o'clock, lest it interfere with the night's rest.

During its *second year* the child should be put to bed at night at the same time as before, and should be allowed to sleep uninterruptedly for twelve hours. In the morning, at about eleven o'clock, the child should be undressed and put to bed in a darkened room and allowed to sleep for two hours. At this age an afternoon nap is not desirable.

After the child is *two years* of age its morning nap is shortened to an hour or half an hour, but the night's rest remains the same. From *two to four years* there is no change, except that the morning nap need not be insisted upon if the child objects to it.

Children *over four years* should go to bed at eight o'clock or earlier, the hour being gradually changed from half past seven for little children to half past eight o'clock as the age of *ten or twelve years* is reached.

Preferably, the child should sleep undisturbed in the morning until he awakens of his own accord, though he may, if desirable, be roused at a fixed hour, not earlier than seven.

He should never be awakened roughly or suddenly, but always gently and gradually.

These hours may have to be varied to suit the individual case. For example, if a child persistently awakens too early in the morning and does not fall asleep again, he should be allowed to go to bed at a later hour than the one given here; if he seems tired when aroused, he should be sent to bed earlier. Regularity in the hours of sleeping is as important in older children as in babies.

For an hour before bed time the child should not indulge in romping games or in excitement of any kind. It may sleep badly in consequence. *After a child is thoroughly awake* in the morning, it must not be allowed to lie in bed, but should be immediately washed, dressed and fed.

THE BABY'S BED.

Wherever possible, the *baby should sleep alone.* There are several reasons for this. In the first place, the mother may accidentally lie on the baby and smother it. Again, if she sleep with it, she is less apt to nurse it regularly than if she has to get up for this purpose. She is also liable to pull the covers over the baby's head and thus deprive it of fresh air.

The best bed for the first few months of the baby's life is the basket-bed or bassinet. The *bassinet* consists merely of a wicker basket with high sides. It may or may not have a hood over one end. It should stand high, so as to escape the draughts on the floor. It is usually covered outside with Swiss muslin or something similar. It may be lined with some colored or white material. The decorations are best when simple and inexpensive, so that they may be changed upon becoming dusty or soiled.

The baby's bed may be improvised from a large oval *clothes-basket.* For this the following articles are required:

A wicker basket; nine yards of natural colored tussore silk at about twenty-five cents a yard; about six yards of lace, the same color as the silk, and four yards of blue or pink ribbon, two inches in width. The depth of the silk will just cover the bed.

Hem down one selvedge of the silk a sufficient width to frill it round the basket and run a reeving string in it; reeve it up to the required size and tack it here and there to the inside of the basket. It will reach to the wicker bar, which is usually placed a few inches down. This arrangement of the reeving string makes it very easy to take off the silk, so as to wash it when required. Line the bottom and sides of the basket with muslin or sateen, that there may be no draughts for the baby.

All round the edge of the basket, over the silk, sew a frill of the lace and put a bow of the ribbon on each handle and at the foot and head of the basket. This makes a bed for the baby, at a very small cost, that is almost equal to anything that could be bought in the shops. Enough silk will then have been left to trim the baby's basket,* which should be made to match.

The bed should be easily portable, so that it may be readily moved from one place to another. Curtains, while they keep out draughts, are apt at the same time to interfere with the supply of fresh air. They also catch the dust. The bassinet is superior to other beds for a baby as it gives the little body more support at the sides and allows more room for tucking in.

A *cradle* is often used, but has serious disadvantages; the rockers are liable to trip people, and rocking itself is not good for the baby's training.

The child should sleep in a *crib* from the time it is

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*See Chapter XIX.

eight or nine months old until it is five years of age. It may use one from birth if the sides be lined to cut off draughts and if pillows be placed at the sides to properly support the child. The crib may be made of wood or metal. Enameled iron is best, as it is the most easily cleansed. The sides should be high and may be either hinged or sliding. Curtains are open to the objections already given. The crib should be provided with springs or with a woven wire mattress.

How to Make the Baby's Bed.—The baby's bed is made up the same, both in the crib and in the bassinet. The mattress should be soft and thin and made of hair rather than of feathers. Over the mattress is laid a rubber cloth or piece of mackintosh. In winter a quilted bed cover placed over this makes the bed softer and warmer. A doubled muslin sheet is laid over the rubber sheet or over the quilted bed cover when this is used. On the sheet, directly under the baby, is placed a pad of nursery cloth, made as described in Chapter XIX, or a small pad, like the lap-protector described in Chapter XXVI.

The upper *coverings* consist of a muslin sheet, as many soft blankets as may be required, and a light spread. In winter an eiderdown quilt may be added. The *pillows* should be small and thin, made of soft horse-hair and covered with a fine linen pillow-slip. Very young infants may have a feather pillow.

How to Keep On the Covers.—The head should never be covered, but the body should be protected by the bedclothes throughout the night. Some children have a habit of kicking and throwing off the covers or of wriggling outside of them. There are various means of preventing this occurrence. One way is to fasten the covers to the pillow with large safety pins but the best method consists in attaching two short pieces of elastic to the covers by means

of a clamp, and tying them to the sides of the crib with pieces of ribbon or tape. The elastic allows the child to move about and turn, and at the same time prevents the covers from being tossed off.

Care of the Bed.—Half an hour before the child is put to bed, the covers should be pulled down and the bed aired until the child gets in. It is well, except in hot weather, to *warm the sheets* by introducing a warming pan or by heating the sheets before the fire or radiator.

The *bed should be aired* thoroughly every morning. The bedclothes should be removed and, with the mattress, exposed for at least two hours to the sun and air in a room with the windows wide open. Whenever a sheet becomes wet or soiled it should be *changed* at once. The bed should be remade at night if this occurs then.

KEEPING THE AIR OF THE SLEEPING ROOM PURE.

The baby's sleeping room should contain plenty of *fresh air* without subjecting the child to draught. Various methods of ventilating a room are described in Chapter XXXI.

Flowers and plants may remain in the room during the hours of sunlight but must be removed when darkness supervenes; in the presence of sunlight they help to purify the air of the room but at other times they tend to vitiate it by using up the oxygen.

Artificial lights, with the exception of electric light, also consume oxygen. Gas not only robs the air of oxygen but increases its impurities as well. With the use of the incandescent mantle, however, this defect is reduced to a minimum. An advantage of the gas flame is that it may be turned down very low and raised again in a moment. Electric lights have the disadvantage that they cannot be lowered. Candles vitiate the air more than any other light.

Lamps often smell bad and are in danger of exploding or of being upset. There is usually no need of having a light while the child is asleep. Sometimes, however, when the baby is sick or must be roused frequently, it may be necessary to have a light all night long. For this purpose a night-lamp is best, as it burns with a faint glow and consumes relatively little oxygen. A small glass chimney makes the flame steadier and protects it from draughts. The candle that furnishes the light is surrounded by a thin layer of plaster of Paris which insures perfect safety. It is even possible to protect the child from the faint glimmer of such a light by fitting over it a dark metal shade with an opening on one side. German floating lights are also employed. Portable electric lights operated with storage batteries are serviceable. They will burn continuously for six to eight hours or will give several hundred brief illuminations before new batteries are required.

CHAPTER XXIX.

EXERCISING AND AMUSING THE BABY.

Exercising the Baby: The infant's first airing; the proper method of holding a new-born infant; taking the baby out; how to carry an older baby; the baby's first exercise; when the baby can hold its head up unsupported; after the child can stand and walk. Amusing the Baby: Toys for baby and child; How to make playthings at home. Games that exercise as well as amuse the child.

"By sports like these are all their cares beguil'd;
The sports of children satisfy the child."

—*Goldsmith.*

EXERCISING THE BABY.

THE Infant's First Airing.—When the infant is three or four days old it may be placed on its back on a pillow two or three times a day and carried about the room for ten or fifteen minutes at a time. When it is two weeks of age it may, properly supported, be taken up in the arms and carried into a somewhat cooler room.

The Proper Method of Holding a New-born Infant.—The common method of holding a young infant by grasping the chest under the arms is incorrect. When the baby is to be lifted one hand should raise the lower portion of the body while the other is slipped under the back and head so as to support them, the child resting on the outstretched palms. After the first month the infant may be carried in the arms with its head and body well supported.

Serious deformities have resulted from improper methods of holding a baby; the spine especially may bend if unsupported.

Taking the Baby Out.—In the summer-time a baby one month old may be taken in the arms and carried out into

the open air during the hours of daylight for ten or fifteen minutes on its first outing and for longer periods on subsequent occasions. In the winter-time it sometimes is well not to take the child out at all until it is two or three months of age. The best time for the outing in the winter is between the hours of ten and three, while the sun is strong. When there is an objection to taking the baby outside, the windows of the room may be thrown wide open and the baby, thoroughly wrapped up, may be carried in the arms about the room for half an hour or so. On cold or damp days, however, it is best that the windows be first opened for an hour and then closed before the baby is brought into the room.

How to Carry an Older Baby.—At the age of three or four months the baby may be seated upon the nurse's arm, its head and shoulders being supported by the hand of the other side. As the child gets older the support of its back and head is not always necessary. It is well to carry the child alternately on each arm, in order to prevent its spine becoming curved.

The Baby's First Exercise.—After the fourth month the child may be placed several times a day on a blanket or soft mattress or in a clothes basket or large, padded box, with its clothes so arranged that it can freely kick and move about. It is important in winter or bad weather to see that the child, when thus playing about, is not exposed to draughts; when the child has catarrh of the head, chest or bowels it should be kept off the floor. A creeping pen will be of service when the child begins to crawl about.

Professor Griffith condemns the common practice of trotting the baby on the knee. He says that when one compares the diminutive size of the baby lying on its back or stomach in the nurse's arms with the vigor of the trotting to which it is subjected there can be no surprise if

CHILDHOOD'S ELOQUENT AFFECTION.

The artist has beautifully caught the spirit of love and affection with which the baby is welcomed into the family by the older brother or sister. The mother's joy is complete in this bond of love.

vomiting or other disturbances of digestion are produced. And even should these not occur the baby may learn to depend on this hard usage for going to sleep.

When the baby reaches the age of three or four months it may spend the greater part of the time in the open air if the temperature be warm and the weather clear. During the daytime it may even be permitted to sleep out-of-doors. It is now usually taken out in a perambulator or baby carriage. The coach should be well balanced and smoothly running, giving the child support at the sides and being provided with a dark-colored, adjustable sun-shade, which should always protect the baby's face from the sun. The infant should lie upon a soft bed and pillow, protected with warm covers, such as a knitted or crocheted afghan.

When the Baby Can Hold Its Head Up Unsupported.—At eight months of age the child no longer will need to have its head supported when it is carried. It may then sit up in its coach on an adjustable seat, propped at the back and sides with extra pillows. To prevent the child from falling out, the carriage should be provided with a strap which goes entirely around the baby's waist, being attached by smaller straps to the sides of the coach. The baby can climb over or crawl under the straight strap which is fastened across the coach in front of the child.

After the Child Can Stand and Walk.—At the end of the first year the child will make attempts at standing, and some months later will begin to walk. But he must be allowed to do so unassisted and without urging or coaxing. When the child is able to walk fairly well he may be taken out of the coach for ten or fifteen minutes at a time and permitted to exercise on his feet. The duration of this daily stroll is increased gradually until at the age of two and a half or three years of age the child may walk possibly half a mile. By this time, if the child has outgrown his coach

or becomes tired of it, he may ride in a go-cart, an express wagon or one of the various forms of children's wagons. In the winter he may be pulled about on a sled.

As the child grows older he will be able to take more and more exercise without fatigue. Those games should be encouraged that develop every portion of the body and bring into play the different muscles. A rocking-horse can be used in the nursery; outside the house the child may exercise by rolling a hoop or riding a velocipede, or by skipping the rope. The latter is a very good form of exercise if not indulged in for too long a time, or with too rapid jumping. The practice of seeing how many times or how fast one can jump has been responsible for many sudden deaths.

When the child grows older any of the games or sports mentioned in chapter VII can be indulged in. There are also many games adapted especially to little children, such as those played in the kindergartens. The games of older children are described later in this chapter.

AMUSING THE BABY.

An infant should not be amused all the time; discontent is frequently the consequence, the child always craving fresh pleasures and excitement. While still very young it may be left alone for a short space of time, when it will learn to play with itself. Nevertheless, a certain amount of distraction is often necessary to prevent the baby's becoming bored, fretful and irritable. There are any number of finger games that a mother can play with her baby, such as "This little pig went to market." A common finger-play used a great deal in the kindergarten is "Thumbkin says, 'I'll dance!'" The mother makes the thumb and then each finger in turn dance as she sings about them; all the fingers,

however, dance together at the words "Dance and sing, ye merry little men!" During the last verse the fingers remain folded. The song is:

1. Thumbkin says, "I'll dance!"
   Thumbkin says, "I'll sing!"
   Dance and sing, ye merry little men;
   Thumbkin says, "I'll dance and sing!"
2. Pointer says, "I'll dance!"
   Pointer says, "I'll sing!"
   Dance and sing, etc.
3. Tall man says, "I'll dance!" etc.
4. Ring man says, "I'll dance!" etc.
5. Little man says, "I'll dance!" etc.
6. All the men say they'll dance! etc.
7. All the men say they'll rest! etc.

Another finger game is to put a nutshell or thimble on each finger and rattle the fingers about to make them sound to the words—

"Rittle rattle, tittle tattle,
All the soldiers rush to battle!
Hear each rover land at Dover,
When he finds the battle over!"

A slow race between the first and second fingers will often amuse the baby, the mother saying:

"Creepy-crawly, yeeny-yawny,
Like two lazy snails;
Let each tread a drowsy head,
Near our lazy tails. [Here doubling the fingers up.]
Ned, good-night, boy—Fred, good-night, boy—
Both began to snore.
Then this crawled out, then that drawled out [opening them],
Dawdling as before."

By making knots in a handkerchief and placing them on the fingers, amusing little games may be acted. Two fingers with a little piece of paper arranged round them as a petticoat may be made to dance. A good imitation baby may be made by painting two eyes and a mouth on the back of the hand and

wrapping the hand and arm in a table napkin made to look like a hood and long clothes. Faces drawn with ink on the back of the finger nails make five jolly companions, who can go through all sorts of talk and performances, or who may be children in a school and answer questions.

One should avoid, however, playing with the child just before its sleeping hour.

Toys for Baby and Child.—After the age of five or six months the child may be amused by a rubber rattle or other toy which makes a noise, and with a rubber or bright worsted doll. Playthings that an infant is constantly putting into its mouth should be frequently and thoroughly cleansed. Very useful toys are those that instruct, such as picture blocks, a Noah's Ark and the like. If a child is given many expensive and fragile toys it soon becomes discontented with what it has and is always wanting something new. It is a good plan to put away for a month a toy the child has become tired of, at the end of which period it will be welcomed as a novelty or as an old friend. The child also learns destructive habits if he plays with fragile toys. It is therefore desirable to give him toys selected for their quality and durability.

Little children are always interested in seeing objects cut out of paper or made by folding a piece of paper. Very pretty scrap books may be made by pasting the pictures from illustrated newspapers and magazines upon sheets of paper or unbleached linen or in a large scrap book. Where a mother cannot afford to buy toys for her child she can often make them at home. The child itself may be taught to make its own toys, thus obtaining from them instruction as well as pleasure.

A fine galloping horse can be made of cork with four burnt matches as legs, the black ends of the matches forming the hoofs. The head and tail are cut out of cardboard, the

features, mane and hairs of the tail being marked on it with ink. A very passable ship can be made from a walnut shell by cutting a piece of cork to fill the shell and form the deck, sticking burnt matches into it for masts and bowsprit, and making the rigging of cotton.

A cheap dolls' house may be made from an old packing-case, turned up on one end, with the cover split up to make floor and walls. The front of the dolls' house should be made of stout cardboard attached to the case by means of a stiff piece of unbleached linen glued to one side of the box so that the cardboard front will open easily. Spaces for the windows and doors are cut out. Pieces of glazed paper may be glued on with strips of linen to form the windows, and the cut-out door may be hinged in the same way as the front of the house. The whole may be painted or enameled; the walls may be papered, and the floors covered with bits of carpets or strips of paper woven as in the kindergarten mat-making. Little strips of cretonne can be fastened as curtains in the windows. The furniture can be made out of odds and ends.

A kitchen table may be made of a piece of cigar box, with four sticks for legs. To make an armchair, stick two corks together for a seat; put four burnt matches as legs and six to form the back of the chair. Cover the legs and back with wool, and use a little piece of chintz or silk as a cushion. To make a chest of drawers, take six small matchboxes, glue the outside cases firmly together in two piles of three each, fixing the sides down the center. This forms a framework for six drawers. Paint the framework and front ends with two coats of enamel, and fasten small buttons with shanks into the ends to form handles. The top and sides may be covered with a piece of silk.

To make a bassinette for a dolls' house, take the insides of two matchboxes, stand one up to form the head, and fix the other inside it. Paste a piece of pink or blue silk or calico

over the whole to make it strong, and then put over the sides a frill of silk or sateen, covered with muslin, fastening it inside the wall of the box about half-way down. Turn this over to make a frill round the outside, gathering it again just below the top. A larger bassinette, which will hold a good-sized doll, can be made out of a larger box, which can be trimmed in the same way. A round strawberry basket covered to match the bassinette, with little pockets sewn inside in the lining, looks very pretty when finished, and will hold the doll's clothes. A tiny cradle can be made from a walnut-shell. A scrap of wool with a piece of calico makes a good mattress, and any little piece of colored material makes a nice coverlet. Tiny china dolls of a suitable size to get into it may be bought for little money.

Games that Exercise and Amuse Older Children.— There are many games which will both amuse the children and yet exercise all the muscles of their little bodies. One of these is the game of "Over," in which the children are divided equally into two lines stationed about five feet apart. The children of each line stand close to one another with their arms up, as in the illustration. The first one of each line, who is the captain, is given a large ball or bean bag, which, at a given signal, he passes back, each child in turn passing it over his head to the one behind him. When the last child in the line receives the ball he runs forward to the head of the line, while all the others take a step back. The ball is then passed back in the same manner as before, this being repeated until the captain becomes the end man. Upon receiving the ball he runs forward to the head of the line again and places the ball upon the floor. Whichever line finishes first wins. If the ball should be dropped it must be returned to the one that dropped it before it can continue on its way.

In the game of "Under" the children are also divided into two lines, but those in each line stand at least one yard

from each other, separating their feet and bending their bodies forward. The captain of each line at a given signal starts to roll the ball or bean bag back between his legs to the one behind. Each child on receiving the ball rolls it between his legs to the one behind so that it will go as far and as quickly as possible. When the one on the end receives the ball he runs to the head of the line, while the others take one step backward, and the game is continued as in the previous one until the captain is again at the head of the line. An even greater amount of exercise is given when the two games are played alternately.

It would be impossible in a work of this character to describe in detail all the excellent games that may be played by children. The few mentioned serve to indicate how a child's development may be favorably influenced by well-directed games.

CHAPTER XXX.

MENTAL AND MORAL TRAINING.

The moulding of character lies in the mother's hands. The control of the bladder and bowels. How to deal with children. A child's sensitiveness. Children's questions. Kindness and gentleness. A child requires pleasure. Politeness. Children's fears. The child a great imitator. How children learn conduct. Practice vs. precept. Making a child truthful. Children's imagination and temper. Obedience and how to enforce it. The spoiled child. Threats and punishment. Order and neatness. Learning to talk. The use of money. Children's pets. Stories told to children. Children in the society of their elders: before company; at the table. Education: Kindergarten, School. The training of backward and mentally deficient children.

"Delightful task! to rear the tender thought,
To teach the young idea how to shoot,
To pour the fresh instruction o'er the mind,
To breathe the enlivening spirit and to fix
The generous purpose in the glowing breast."

—*Thomson.*

THE MOULDING OF CHARACTER LIES IN THE MOTHER'S HANDS.

ONE of the most important duties of parents is to train the child so that it will grow up strong in mind and in morals, as well as in body. In the mother's hands largely lies the moulding of the child's character. The mental and moral attitude of a man is due in great part to his early training. The mother decides the destiny for good or evil. A woman may fail in this duty through ignorance or inexperience, especially if her own early training was faulty. It is to furnish some guide to the inexperienced that this chapter has been written. The child should have the first claim on the mother's time, which

claim should not be interfered with by demands of public interest, of society, or of fashion.

With the development of the child's character the mother's character is likewise broadened. One reacts on the other; the training is a mutual education.

THE CONTROL OF THE BLADDER AND BOWELS.

The mother or nurse cannot begin too early to train the child in the control of the bladder and the bowels. These acts are usually performed with some regularity even in babies, the bladder usually being emptied after each feeding. At the time of the expected evacuation the mother or nurse should hold the baby over a receptacle. She may make some sound that the child will learn to associate with the act. After a time the child will learn to recognize the purpose of the procedure and be guided accordingly.

When the baby is old enough to sit up it may be placed in the nursery chair at the proper time. Mothers should observe the greatest regularity in this, in order to train the baby properly. Most children have acquired control by the time they are eighteen months old, many at the age of a year, or even less. All should have done so at the end of the second year at the latest. The training should be conducted by patience and perseverance, not by punishments.

HOW TO DEAL WITH CHILDREN.

A Child's Sensitiveness.—Little children are extremely sensitive and are often made very miserable by a slight action or a thoughtless word. They may look back for years with painful recollections upon an expression of ridicule. Children usually may be won over by words of praise and small deeds of kindness but are often alienated by little acts of thoughtlessness, neglect or impatience.

Children's Questions.—The constant questioning of little children is often very trying but should not be disregarded or rudely repulsed. It should be borne with patience and even encouraged unless it is out of place, when it must be gently checked.

Kindness and Gentleness in Dealing with Children.—Children have to learn not to make a noise which comes natural to them; this should be taught them gently and not harshly. No one should be cross or impatient in dealing with a child. If a mother feels irritable and not quite well she had better leave her children for a few hours and take a rest if she possibly can. Both mother and nurse should avoid using harsh language of any kind and must always give their commands quietly and not roughly. Children that are constantly reproved and reprimanded are very apt when they grow up to be impatient of all control and to be unable to govern their own passions.

When asking a favor of a child, one should always say "Please" and "Thank you," else one cannot expect the child to use these expressions.

A Child Requires Pleasure.—The child's life should be as full of pleasure and of change as possible, monotony being very trying to the young, active mind.

THE CHILD A GREAT IMITATOR.

Children learn conduct, as they learn other things, by observation. They learn that chairs are things to sit upon, because they see people sitting on them. In the same way a child learns that certain things are proper to do because he sees others doing them.

Practice versus Precept.—If children come to realize that in their daily lives there is a difference between teaching and conduct and that the precepts taught them are by

no means acted out by those who teach them, they will learn to receive the instruction more as abstract propositions than as living facts. We cannot expect children to have reasonable conviction, but we may be sure that they will readily enough follow repeated example. The child must live in a constant atmosphere of the kind of life that it is supposed to lead. He will learn much more from this atmosphere than from any other teaching to which he may be subjected.

Making a Child Truthful.—It is not sufficient to tell a child not to tell a falsehood; the child itself must never be told a falsehood by its parents or nurse. If, in addition to being taught not to lie the child is never told an untruth, he will run little danger of becoming untruthful. Punishing a child for a fault after he has told the truth about it only runs the risk of encouraging him to lie on the next occasion.

Children's Imagination and Temper.—The vivid imagination of the child causes him to regard many of his absurd fancies as true. He may tell all manner of false stories which, for the time, he may actually believe. This romancing has no connection with deliberate lying and should be distinguished from it.

A baby is so imitative that his temper and habits of mind and body are ostensibly copied from examples about him. That is why quiet tones, cheerful manners and loving and tender ways should be used in all one's associations with a child.

CHILDREN'S FEARS.

The child should be taught not to have an unreasoning fear. This is done by the caretaker herself not showing any fear. The child should never be frightened in any way, never shown terrible sights or told horrible tales. Toys,

such as a jack-in-the-box, should never be given to him. Imaginary fears of children, however, require very careful handling and should be gently explained away.

OBEDIENCE AND HOW TO ENFORCE IT.

The child should be taught to obey implicitly and without questioning. It is a great mistake for a mother to offer a reward to a child for obeying some command. By such means a child learns to regard his act of obedience as a favor to the parent in return for full value received. The child must learn to obey because he is commanded by his parent and for no other reason. On the other hand, the mother must avoid being tyrannical, exacting or unreasonable. She must always bear in mind that the child may be in the right. It is always well to explain to the child what he does not understand, but this explanation should never be made a condition of obedience. That is to say, the command of the parent does not have to be explained before the child must obey it.

Firmness a Requisite in the Mother.—Very early in the child's life the mother and the nurse must learn not to give in to the child simply because he cries. To let him have his own way is much easier, of course, than to argue or fight with him. A fond mother who in her anxiety to gratify every whim of her little one yields to his every desire is doing the child incalculable harm. The mother must be able to say "No" and the child must be taught to take "No" for an answer.

The Spoiled Child.—In a scrap-book belonging to a mother who has brought up a large family the author came upon the following selection:

"It is so infinitely easier to spoil a child than it is to train him wisely, to give him the thing refused a moment before because he cries for it and the noise he makes is an

HAPPY PLAYTIME HOURS.

The boundless buoyancy of children is a sign of happy hearts and healthy bodies, and should be curbed only when very necessary, and then with not too harsh a rebuke.

annoyance. * * * Heavens, the patience of all the angels combined is needed to make one perfect mother. The responsibility has no let-up to it; it is line upon line and precept upon precept, in season and out of season, and even then suppose one should fail? It must be terrible for a parent to see the unrestrained passions of a well-grown child, to watch his violent temper if angered, his sullen sulkiness if thwarted, his selfish, uncheerful manner to those around him, and to have conscience say: 'That is all your work; you spoiled him because it was too much trouble to train him properly. If you had instructed him in gentleness and forgiveness and self-control, he could never exhibit such ungoverned rage; if you had denied him things with firmness, and taught him to bear disappointments, he would not to-day make your heart ache with those black looks and with sulky silence; had you early taught him to be generous in thought and in deed, and had impressed upon him that a certain amount of cheery friendship is due one mortal from another, you would not have been forced to blush for his loutish ungraciousness of demeanor.'"

THREATS AND PUNISHMENTS.

A mother should never use a threat unless she intends to carry it out. When a child finds that after committing an offense he does not receive the punishment with which he was threatened, he will soon learn to despise the parent's command and in time will learn to distrust all the threats that are made him. But if he receives the threatened punishment he will respect and believe in the parent and trust her afterwards and possibly on the next occasion will be sufficiently influenced by the threat alone.

Punishments.—The punishment should be administered soon after the act has been committed, and not be postponed until the child has forgotten all about his naughti-

ness. Punishments should never be employed unless they are really necessary, and then they should be given in proportion to the offense and not in proportion to the resentment of the parent. They should never be given in anger. The child should be punished for the forbidden act rather than for the results of the act. If he is told not to throw his ball about the room, he should be punished when he disobeys, not punished only when he breaks a window. Nor should his disobedience be punished only when the mother is out of sorts, and be laughed at when she is in a good humor. The child should never be scolded for an accident which could not have been avoided, such as upsetting his cup or breaking anything, when this is merely due to the clumsiness of untrained hands.

The nature of the punishment should be carefully considered. Punishments that frighten the child or produce injury must be avoided. Boxing on the ears, for instance, may cause permanent damage to these organs and imprisonment in an unventilated closet deprives the child of fresh air.

HABITS OF ORDER AND NEATNESS.

The child should be taught habits of neatness—to keep his toys in order and put them away carefully when through with them. He should arrange his clothing neatly on undressing for the night. When coming in from outside he should hang up his hat and coat in their proper places.

LEARNING TO TALK.

The age at which a child learns to talk varies greatly in different children. One infant may begin to make intelligible sounds at the age of eight months, while another may not be able to make itself understood until two years of age. Children who learn to speak at an early age are

not necessarily more intelligent than those who do not talk until later. The child should be encouraged but not forced when learning to talk. Mothers should never use baby talk in conversing with a child. This nonsense is not intelligible to the child and often impedes its progress in real talking.

If the child seems to have some impediment in its speech it should be taken to a physician. There need be no cause for anxiety if the child is backward in speaking, provided it shows intelligence in other ways.

TRAINING IN THE USE OF MONEY.

It is not a bad idea to train children at an early age in the use of money. A small weekly allowance might be given the child, the amount depending upon the age of the child and the wealth of the parents. Or the child might be rewarded when it does some useful work, such as weeding the garden or hemming a pocket handkerchief. At the same time the child should be taught how to practice economy. As soon as the child has had some training in arithmetic he should be taught to keep an account of the amounts that he receives and spends, recording them in a book provided for the purpose. In this way he will grow up knowing the value of money and the care of it.

CHILDREN'S PETS.

There is a distinct educational value in allowing a child to have the care, or partial care, of a pet of some kind. Pets may be the means of rendering their little masters and mistresses kind, humane and thoughtful, and increasing their love and sympathy for objects in nature.

The child should be taught that an animal is sensitive

and suffers pain, and he should always be punished when guilty of cruelty towards one. He should be taught to feed his pet regularly, to make its bed if necessary. In this way a sense of responsibility and of duty towards one's fellow creatures is imparted.

STORIES TOLD TO CHILDREN.

Parents should use great caution in the choice of stories that are told or read to little children. Stories of ghosts and goblins are often the cause of an unreasoning fear in the child. The wolf, the bears, and the giants of the familiar fairy stories may haunt the child at night. Goody-goody books are objectionable; also stories which excite the imagination too vividly or too painfully, such as tales of sorrow and injustice.

Every time a certain little boy heard "Cock Robin," he used to weep bitterly at the end of the lines:

> "All the birds of the air fell to sighing and sobbin'
> When they heard the bell tolled for poor Cock Robin."

Mrs. Ballin, in speaking on this subject, says: "I remember that in a very nice little song book we had there was a song about 'A poor little baa, Who wandered away from his own mamma,' and this so affected my brother, who thought how dreadful it would be if he were separated from *his* own mamma, that if any allusion to the song was ever made, he would burst into tears and refuse to be comforted. Even now, man as he is, he declares that he cannot bear allusion to this song without an uncomfortable feeling. This being so, it is easy to imagine how much harm may be done to children by an injudicious choice of books. Once, accidentally, a toy book was put into my hands in which there was a description and a picture of a race of gnomes who had six toes on each foot and no toe-

nails. I have now a vivid feeling of the horror this caused me. I dreamed of it night after night, and it made me quite ill. Undoubtedly, the minds of impressionable and nervous children may be seriously affected by this means. Yet this is the sort of book that is largely produced, and which children are supposed to enjoy."

Mothers should be careful about the paper and type of the books their children read, and about the positions they assume when reading.

CHILDREN IN THE SOCIETY OF THEIR ELDERS.

The child should see enough of company to become accustomed to strangers, but it should not be brought into the parlor or drawing-room to be admired by visitors. It should not be shown off by being made to recite and to sing or to excite admiration generally.

By mixing too much in grown-up society, children become conceited and artificial. They interrupt the conversation of their elders and are annoyed if they are not noticed and admired or praised. They are apt to repeat much that they hear and when checked for being too communicative are apt to become deceitful in consequence. As children should not be excited before going to bed, they should have their parties in the afternoon rather than in the evening.

Children at the Table.—It is a question whether children should be allowed to come to the general table or should be given their meals by themselves in the nursery. It might be well while the child is very young for it to take its evening meal, at least, away from the excitement of the general dinner table. There seems to be no reason, however, why the child should not take its breakfast or its midday meal with the rest of the family.

As soon as the child reaches the age of two and a half or three years it should begin to take all its meals at the

general table, unless company is present. The child will thus learn better table manners than if it eats by itself. It must be taught, however, to behave quietly while at the table, and should not be permitted to join in the conversation. As the child gets older, however, and becomes able to talk intelligently, topics for conversation may be chosen in which it can join.

COMPANIONSHIP OF OTHER CHILDREN.

It is wrong for children to be deprived of the society of those of their own age and to associate only with adults. Grown people, however kind and judicious they may be, cannot enter into the thoughts and aspirations, the little hopes and fears, pleasures and disappointments of the child. They often have neither the time nor the patience to listen to the prattle which the little one longs to pour into some appreciative ear. They are often indifferent to the trifles which the child considers of such great importance.

The companionship of other children is necessary. A child who is accustomed to have playfellows of its own age learns that there are other beings in the world possessing the same abilities as itself, enjoying the same pleasures and suffering the same pains. The child becomes more natural than when it is constantly with adults, and loses its shyness and over-sensitiveness. When children play together, however, it is important for the mother to have some supervision over their morals. At no age are they too young to need this watchfulness. The fact that a child appears innocent is no indication that it necessarily is so.

THE EDUCATION OF CHILDREN.

Children may be sent to a kindergarten when three or four years old. Here the child acquires knowledge by play. At the same time that it is amused it learns a certain degree

of discipline and self-rule. The eye and hand are trained by weaving colored papers or making various designs.

The child should not go to school until he is six or seven years old. The daily session should not exceed three hours for very young children or six hours for older ones. There should be one or two intermissions or recesses in each session during which the children should play in the open air. Physical exercises should be taught in the school. Too much time should not be spent in home study. Children should be taught to study for the sake of the knowledge gained rather than to compete with others or to get high marks. The general development, the progress and the individuality of each child should be considered in education. The precocious child is to be restrained rather than stimulated by exhibition and applause. The backward child should receive kind encouragement and not be punished or degraded.

The school-room should be well ventilated and should not be too crowded. If the child complains of headache, or of difficulty in seeing the board, or of the printed page becoming blurred, he should have his eyes attended to. Many of the leading cities of the United States have established medical inspection of the public schools—an excellent plan, which should be adopted by all communities.

THE TRAINING OF BACKWARD AND MENTALLY DEFICIENT CHILDREN.

A child who is mentally deficient can be best educated at an institution where the teachers are fitted by training and experience for their work. In most of the larger cities there are special schools for backward children.

In caring for such children at home it is necessary first to cause as soon as possible the formation of correct habits. There should be a regular time for the evacuation of the

bladder and bowels. Some advise the giving of an enema daily. Destructive tendencies in a mentally deficient child are not due to wickedness but to an inability to control its morbid impulses. The cure is difficult. Miss Bancroft thus describes the method she adopts at her training-school:

"We have a little boy who has been with us a year. When he came, if he saw a flower, vase or book, his impulse was to throw away the flower, dash over the vase and tear the book. He is now in a room that is as sweet and pretty as can be, and he destroys very little in that room. He has been trained to handle flowers and to look at books and vases, not to toss or break or tear. He does this, except on very rare occasions, under the direction and control of an attendant or teacher who uses his hand as she would her own if she were handling the article. Then he is taught to bring the article to his attendant or teacher. If he does this without tearing it, he gets a piece of candy, so that gradually he gets an idea of associating something pleasant with the occasions when he sees these things, but does not destroy them. The process is, of course, slow; but, being founded on a rational knowledge of the condition, is sure. With other children we use different methods. A little girl would, in certain nervous paroxysms, break tumblers at meal time. For a few meals she was put at a table where she had to use a tin cup until 'her hands got well.' When they were perfectly well, so that they would not hurt her tumbler, she was allowed to come back again and use her tumbler. The method of treatment proved speedily efficacious; hand and tumbler were soon restored to their former friendly relations."

It is most essential that these children should live in strict accordance with the rules of hygiene laid down in this book. Any physical defects, such as eye-strain, enlarged tonsils, adenoid growths at the back of the nose, and so forth, should receive prompt medical attention.

CHAPTER XXXI.

WHEN THE BABY GETS SICK.

How to Tell When a Baby is Ill: Its cry, cough, position, movements and gestures; grinding the teeth, difficulty in suckling; appearance of the face and head, chest, abdomen and tongue. The baby's temperature. How to take the temperature. The pulse in sick children. The breathing. The baby's bowel movements. The Management of Sick Children: Selection of the sick-room; ventilation, heating. The bed; articles needed in the sick-room; cleansing of the sick-room. The care of the sick patient. How the child should be dressed in bed. Feeding the sick child. Administering medicine to the child. Treating the throat. Administering a rectal injection. Attention to the urine.

"O Woman! in our hours of ease
Uncertain, coy, and hard to please;
. . . . . .
When pain and anguish wring the brow,
A ministering Angel thou!"

—*Scott.*

HOW TO TELL WHEN A BABY IS ILL.

AN infant is unable to express its thoughts and sensations in words and can indicate its discomforts only by cries and movements. By examining the baby carefully and noting accurately its various symptoms, one is able to tell when it is sick and often to locate the disease.

The Baby's Cry.—From the character of the cry a great deal can be learned as to what ails an infant. A steady cry is usually due to hunger or to thirst, occasionally to ear-ache or to the pricking of a pin. The fact that the cry stops when the baby is nursed does not necessarily indicate that it is caused by hunger. If the crying comes in paroxysms or

spells, being very violent for a time and then ceasing, it is probably due to colic. When a child cries every time it is touched it is usually a sign that the pressure causes pain. If the baby cries when the bowels are moved it shows that pain accompanies that operation; if when anything goes into the mouth, that there is some soreness there; and if upon swallowing, that the throat is inflamed.

The Character of the Cough.—Much can be learned also from the character of the cough. In bronchitis the cough is frequent and loud, at first being tight and later loose. A very tight suppressed cough, followed by a grimace or by a cry, indicates some inflammation about the chest, often pneumonia. In spasmodic croup the cough is brassy and barking—the so-called croupy cough.

The Position Assumed by the Child.—The position of the baby is a matter of importance. When an infant is feverish or in pain it is usually very restless, and wants to be taken up and put down again and carried about. When a child is exhausted by an illness, or by a severe acute disorder, he lies upon his back. When he wants to be propped up with pillows, or to be held erect, or thrown over the mother's shoulder, it is usually a sign that breathing is interfered with.

Movements and Gestures.—The seat of disease is often indicated by the little one's gesture. Babies frequently place their hands near the seat of pain. Picking at the nose is a frequent symptom in cases of intestinal worms. When the baby is about to have a convulsion he often draws the thumbs tightly into the palms of the hands and straightens or bends the toes stiffly. When suffering from colic an infant alternately doubles up and straightens out its body, squirms about and makes fists. Grinding of the teeth usually occurs when digestion is disturbed and sometimes when worms are present, or it may be only a nervous habit.

Difficulty in Suckling.—When a baby nurses only for a minute and then lets go of the nipple, there usually is some obstruction to breathing either in the nose or in the lungs. When it drops the nipple with a cry after getting a few sucks, its mouth probably is sore. If a baby swallows with a gurgling noise and takes as little food as possible, it doubtless has a sore throat.

Appearance of the Face and Head.—The color of the skin is often altered in disease, becoming pale, yellow or bluish. The face is swollen and flushed in whooping cough and measles, giving the child a heavy, stupid expression. It is puffy, especially about the eyes, in Bright's disease. When the system is drained by severe diarrhea the face becomes shriveled and wrinkled and the fontanelles depressed.

Conformity of the Chest.—A glance at the chest will often aid in determining abnormal conditions. Knobs on the ribs, the so-called rachitic rosary, and a violin-shaped chest occur in rickets. When breathing is difficult there is a drawing in of the space between the ribs as the chest heaves.

Appearance of the Abdomen.—The abdomen is hard and swollen in colic, in rickets and in chronic indigestion, but is usually much sunken in severe exhausting diarrhea and in inflammation of the brain.

The Tongue.—Little can be learned from the tongue of an infant, as it is usually coated in all disturbances of the stomach and bowels, and in any disturbance accompanied by fever, while in severe inflammation of the bowels it may have a perfectly natural appearance.

THE BABY'S TEMPERATURE.

During the first week of life the temperature of the baby is about 99°, later settling down to the normal, 98.5°. Children's temperature rises at the slightest cause. Conse-

quently a high temperature in a child is a much less serious matter than when it occurs in an adult. Nevertheless a child with fever should always be put to bed and given a strict milk diet. It is usually safe to administer a dose of castor oil or calomel and even to give the child a hot bath. In every case, however, the physician must be sent for. One can never afford to take any risk.

HOW TO TAKE THE TEMPERATURE.

One who undertakes to nurse a sick person must know how to take the temperature.

The Clinical Thermometer.—The amount of fever is measured by means of a small thermometer, which is provided with what is known as an indestructible index; that is to say, the mercury rises when heated and then remains stationary until shaken down.

Before the thermometer is used the mercury must be shaken down to a point below the normal mark. To do this requires some skill. The thermometer is grasped between

The Clinical Thermometer.

the thumb and the closed forefinger in a position parallel to the thumb and is swung downward with the motion used in ringing a bell. It should not be held as a pen and shaken up and down.

Different Methods of Taking the Temperature.—The temperature may be taken by mouth, axilla or rectum. It is usually taken *by the mouth* in older children, the bulb of the thermometer being placed under the tongue and the lips being tightly closed on it.

THE ROYAL GERMAN FAMILY.

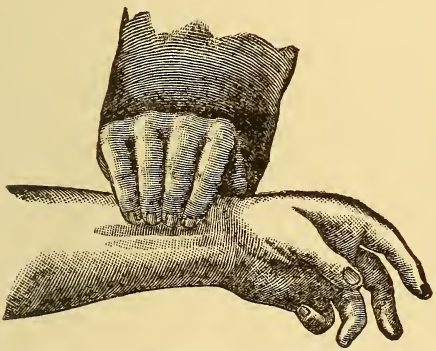
To the German people of the fatherland and the world over the large family of comely children in the Emperor's home is a source of pride and gratification. The fatherland is safe as long as the home is pure.

In young children and in unconscious patients the temperature is taken *by the axilla.* For this the thermometer and the arm-pit must both be perfectly dry. The bulb of the thermometer is inserted in the arm-pit and the arm is held tightly against the side.

In infants the temperature is taken *by the rectum,* the thermometer being smeared with vaseline and then introduced.

THE PULSE IN SICK CHILDREN.

In an endeavor to find what the pulse-rate of a sick child should be at the different ages and with different degrees of fever, the author examined over 7000 cases and hospital records. After discarding all those cases in which owing to the nature of the disease the pulse is abnormally slow or abnormally rapid he calculated the average pulse-rate of the remainder. He found that when the temperature is normal, the pulse is 122 from birth to the end of the second year, 114 from the second year to the end of the fifth year, 103 from the fifth year to the end of the ninth, and 89 from the ninth to the end of the twelfth year. For every degree the temperature rises, the pulse increases four to seven beats a minute, depending on the child's age. The pulse also increases with the slightest excitement, such as crying or even suckling. The author's investigation brought out a most interesting and surprising fact which proved that the statements in regard to a child's pulse as found in the text-books are



FEELING THE PULSE.

incorrect: *i. e.*, although with each degree of temperature the actual number of pulse-beats is greater the younger the child, the amount of increase is greater the older the child.

A CHILD'S BREATHING.

In the investigation of numerous records just mentioned the author also endeavored to find what is the normal respiration-rate in children at different ages. When the temperature is normal an infant under two years of age breathes thirty times a minute, a child between two and five years breathes twenty-six times a minute, one between five and nine years twenty-five times a minute, one between nine and twelve twenty-four times. When a child becomes feverish it breathes more rapidly, the actual number of respirations as well as the amount of increase for each degree of temperature being greater the younger the child. For each degree the temperature is increased, infants under two years of age take 3 more breaths a minute; very young children between two and five years of age take 2½ more breaths a minute; children between five and nine years take 2 more; and children between nine and twelve years of age take 1½ more breaths a minute. When the child is debilitated and poorly nourished and when it has some disease affecting the heart or lungs the breathing is much quicker than in the figures given. In meningitis, on the other hand, it is much slower. Marked irregularity in the breathing is an alarming symptom. Breathing through the mouth usually indicates enlargement of the tonsils or of the adenoid tissue at the back of the nose. Labored or noisy breathing means that there is some obstruction in the throat, neck or lungs.

THE BABY'S BOWEL MOVEMENTS.

When the baby's digestion is disturbed, which often may happen, a change occurs in the appearance of the

bowel movements. The color may vary from white to black, the latter occurring after the taking of certain medicine, such as bismuth and iron. If the passage is green, one should note whether it was that color when passed, it having already been stated that passages which were yellow when passed often turn to green on exposure to the air. When lumps of undigested milk appear in the stool, they indicate that the infant has not digested properly one or more ingredients of its food. A tough white curd is a sign that the baby is getting too much proteid; when the curd is yellow and soft it means that he is getting too much fat. The percentage of the ingredient which is not being digested must then be reduced.

THE MANAGEMENT OF SICK CHILDREN.

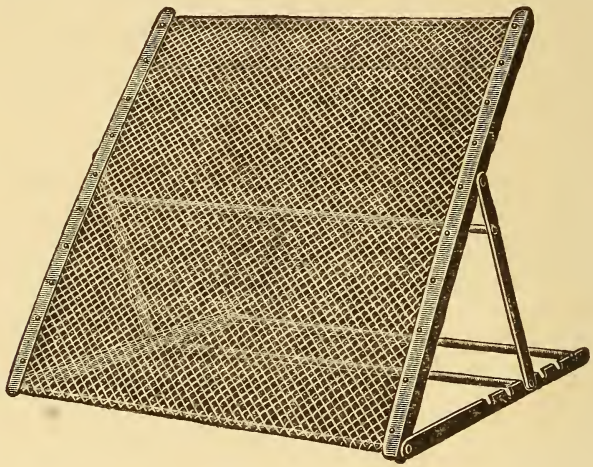
The management of a sick child is a subject requiring both knowledge and skill. A trained nurse who has had experience with children will always be a great help when the baby falls ill. Yet as she usually tends her sick child herself, a mother should be familiar with the proper methods of nursing. In the management of sick children, gentleness, firmness, sympathy, truthfulness and tact are all necessary; and the child's confidence must be won.

SELECTION, PREPARATION AND VENTILATION OF THE SICK-ROOM.

The sick-room should be near the top of the house if the disease is contagious, but otherwise is more convenient when on a lower story. The room should be large and sunny, and should have a good-sized window or several windows opening top and bottom and working smoothly and easily, in the summer-time being protected from flies, mosquitoes and other insects by screens or mosquito netting. The floor is best covered with strips of old carpet which should subse-

quently be burned. Where the carpet cannot be removed, it should be covered with linen. All unnecessary pictures, furniture and other objects should be removed.

Ventilation.—The room should be well ventilated by means of windows. Draughts may be prevented by placing under the lower sash a board four to six inches wide, a carpet sack, or anything else that answers the purpose. Another method is to open either the lower or the upper sash, and cover the space thus made with a piece of paper, gauze, wire,



Bed-rest.

or flannel, in such a manner as to direct the air upward. A blind or an inside shutter may also prevent a draught. In addition the room should be thoroughly aired two or three times a day by opening all the windows top and bottom for a few minutes while the patient is covered up head and all or is removed into an adjoining room.

Heating the Sick-Room.—The temperature of the sick-room should be kept at about 60° Fahrenheit when the patient is in bed, and at about 65° Fahrenheit when he is up all day. It should always be tested by means of a thermometer. The best method of heating is by the open fire-

place and grate. Stoves are not so good. When one is used moisture should be supplied by means of vessels of water placed on the stove or about the room.

THE BED.

The best and simplest bed is one made of brass or iron with a divided spring or a woven wire spring mattress. It should be accessible from both sides. The mattress should be filled with straw, horsehair or wire. Sheets of white bleached cotton are best, although in the summer-time linen may be used. The blankets and outer coverings should be light in weight. When in use the bed must not covered with a heavy cotton counterpane or down quilt, as its ventilation is thereby interfered with. Two moderately firm horsehair pillows should be provided. The bed should be made with draw sheets as described in chapter XIX, on "Preparations for the Confinement."

THE BEDSIDE TABLE.

ARTICLES NEEDED IN SICK-ROOM.

When a sick child sits up in bed his back should be supported by a *bed-rest* or by a straight-backed chair placed behind the child in such a position that it rests on the front edge of its seat and on the top of its back. Sometimes it is

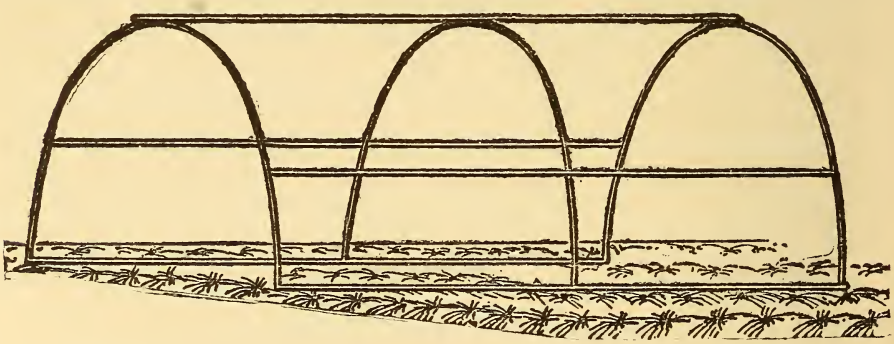
necessary to keep tne weight of the bed clothes off the child by means of a *bed-cradle,* or by placing three half barrel hoops over the body at proper intervals, and tying the ends of these to the sides of the bed. Other articles needed in the sick-room would be a portable *bed-board* or *bedside table,* a *screen, bed-pan* and an *urinal.*

CLEANSING THE SICK-ROOM.

The sick-room should be throughly cleansed, but in a manner that raises no dust. Everything used about the patient should be cleansed daily and once a week should be washed out with soap and water and then left standing in boiling water for an hour.

How to Remove Stains.—Bed clothing, body clothing and other articles when stained, should be placed at once in a mixture of carbolic acid and soap prepared in the following manner:

One and a half or two parts (ounces, pounds, whatever measure is used) of common soft soap are dissolved in one



BED-CRADLE.

hundred parts of cold water, after which three parts of carbolic acid are added, and the mixture is thoroughly stirred. After soaking in this mixture for half an hour or an hour the

clothes are removed and thoroughly rinsed in cold soapsuds until all traces of stains have disappeared. After this they may be washed in the regular way. Another method is to put the soiled articles into cold water for two hours and then boil them.

To remove fresh blood stains from blankets or ticking a paste of fine starch or wheat flour is applied and allowed to dry.

THE CARE OF THE PATIENT.

The Sick Baby's Toilet.—Every night and morning the child's face, neck, hands, back and shoulders should be washed, the back and shoulders being then rubbed with alcohol and dusted with an absorbent powder. During the day a warm general bath should be given, special attention being paid to the arm-pits, feet and legs. The mouth should be rinsed and swabbed at least three times a day, in some cases every hour. This may be done with a small tooth brush, or small squares of gauze or old muslin wrapped around the index finger.

Cleansing the Hair.—If the hair contains nits or parasites it may be cut close or even shaved, or it may be treated in one of the following manners:

The head is bound up for two or three days in a cloth kept moistened with a five per cent. solution of carbolic acid, or a solution of bichlorid of mercury in the proportion of one grain to the ounce, or a decoction or alcoholic solution of larkspur. Over this a cap of oiled muslin is placed, the pillow being protected by a rubber cloth. Another method is to mix equal parts of kerosene oil and olive oil and rub this mixture well into the scalp at night, the head being then tied up with a piece of muslin. When this is removed the head should be thoroughly dried, and, if desirable, alcohol may be rubbed in along the roots. Any of these methods

will destroy both parasites and nits. The latter, however, are very difficult to remove. Their connection with the hair is dissolved with vinegar, which may be rubbed in the hair or applied on a cloth. A fine comb will then easily remove them.

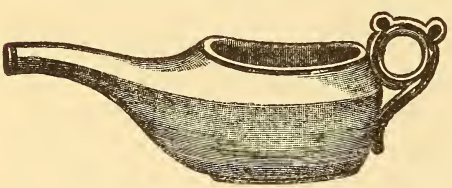
HOW THE CHILD SHOULD BE DRESSED IN BED.

A baby confined to its bed should wear merely a night dress, having one for the day and another for the night, but when it is propped up in bed it should wear a light sack. Whenever the child is taken out of the bed, if only for a moment, a wrap should be thrown about it.

FEEDING THE SICK CHILD.

In feeding a sick child, it is well to regard his appetite, his likes and dislikes, his whims and fancies, his digestive ability, the time when he is most faint or hungry, and the quantity he usually can eat. The food must be carefully prepared and served in a dainty manner. When a child is easily satisfied, instead of forcing the food, it might be better to feed more frequently and give less at a time. The child will usually drink all of a small glass of milk when if the glass be large it will take much less or none.

Character of the Food.—The food must be fresh and in perfect condition and properly cooked and seasoned when served. Hot food should always be served hot, not luke-warm, and cold food should always be served cold. When milk disagrees or is distasteful it may be diluted with plain or carbonated water or made alkaline by the addition of lime water or baking soda, the latter in the proportion of ten



Feeding Cup.

THE FIRST STEPS.

The day the babe first tries to make its tottering way between two pair of outstretched arms is one of triumph for the mother. The child by each succeeding experiment gains confidence in his powers of movement.

grains to the pint, or a pinch of salt, a little sugar, a little cocoa or extract of vanilla may be added. As a rule the child should be given plenty of water, which must first be filtered and boiled.

ADMINISTERING FOOD TO THE SICK CHILD.

The child should be fed regularly, and should be allowed sufficient time to eat in a leisurely manner. He should be assisted when necessary, and entertained with interesting and cheerful conversation. When the child is helpless, the nurse places her hand beneath the pillow and raises the head slowly and gently, keeping it straight so as to prevent the food coming out of the side of the mouth, but not bending it so far forward as to make swallowing difficult. The child should be fed with a medicine cup or tumbler, which should never be more than half full, with a glass or china feeding cup, a spoon, a medicine dropper, a nursing bottle, or through a glass or rubber tube. One mouthful must be disposed of before the next is given.

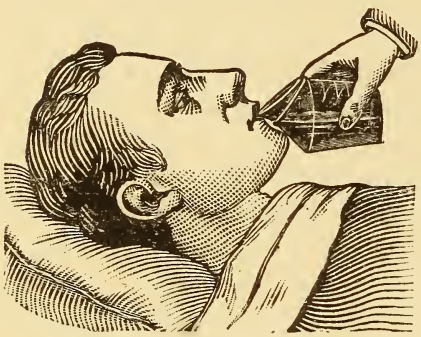
Combination
Feeding and Drinking Cup.

Feeding an Unconscious Child.—An unconscious child should not be given more than one teaspoonful or less than half a teaspoonful at a time. The spoon should be placed far back in the mouth, emptied slowly and withdrawn, the lips and nostrils being then held shut. The nurse must see the child swallow before she repeats the process. The medicine dropper should be inserted between the cheek and teeth as far back as possible, and then emptied. It should not be

placed between the teeth, as it might be bitten. Another method is to pour fluids with a spoon or medicine dropper into the nostril.

ADMINISTERING MEDICINE TO THE CHILD.

When the child has not been trained in habits of obedience, the giving of medicine is often rendered very difficult. Persuasion should first be tried, honest bribery being permitted, such as the promise of chocolate or other sweet, a penny, or some simple toy. If the child should remain obstinate, it is best to waste no further time in argument or pleading. The nurse should take up the child, wrap a shawl or sheet closely around its body and arms to prevent interference, hold the nose carefully and when the mouth is opened insert the spoon or medicine dropper in the manner just described. If this is done without excitement or anger, but with great firmness and as a matter of course, it may not often have to be repeated, as the child will learn to regard it as inevitable and in consequence will often take the medicine quietly.



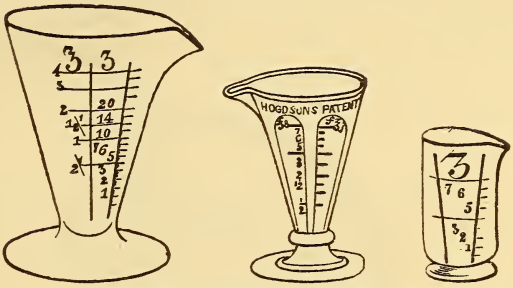
Feeding a Patient in the Recumbent Position.

Giving Medicine to an Infant.—To make a young baby open its mouth, one should press backward and downward on the chin with the finger. When an infant spits out the greater part of a teaspoonful of medicine the dose should be given a little at a time. It may then be taken very well.

Avoidance of Deceit.—The child must not be deceived. It should never be told that a disagreeable medicine does

not taste bad or that the dose is to be the last when such is not the case.

Minim Glass.



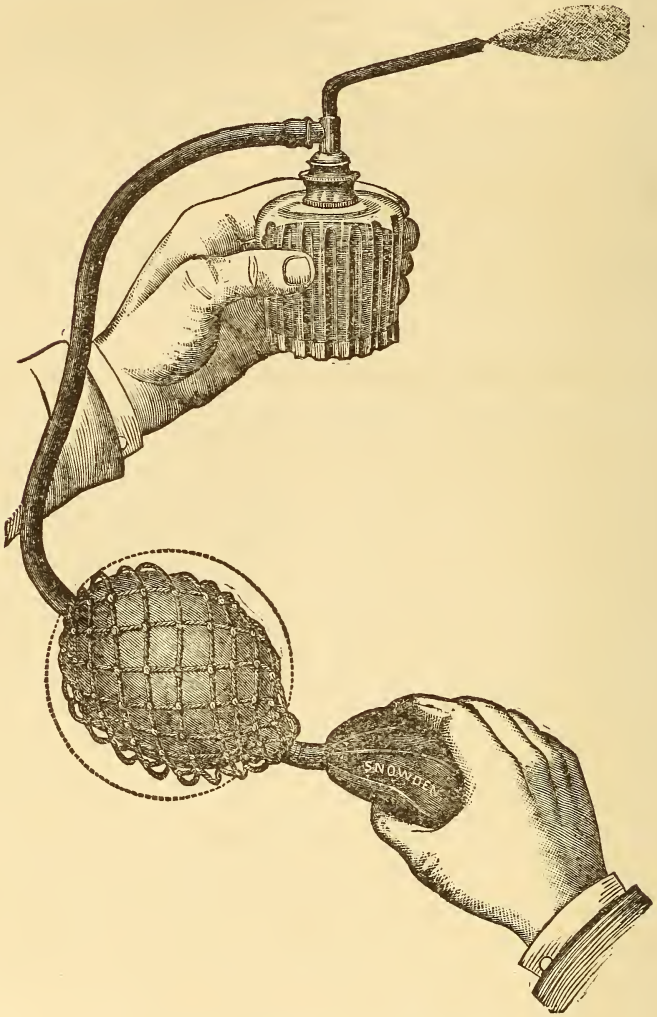
Graduated Medicine Glasses.

How to Give Medicines to a Child.—The bad taste of a liquid medicine may be avoided to some extent if the dose be immediately preceded and followed by a sip of water, a mint drop or the suck of an orange. When liquid medicines are given, they had better be measured by means of a medicine glass, as teaspoons vary greatly in size, and it is impossible to determine just when they are exactly full. An oil should be given from a spoon previously heated in hot water. Powders are best placed directly on the tongue and washed down with a sip of water. They may be mixed with a little sugar and taken in the same way, or a small quantity of sugar may be put in a teaspoon, the powder emptied on it evenly, and the spoon filled with sugar, the whole then being stirred. Powders may also be stirred up thoroughly in a little jam or scraped apple if this is allowed. Tasteless powders may often be given in bread and milk or milk toast without the child noticing it.

Pills cannot be taken by very young children, but if placed within a little jelly or preserved fruit can often be taken by older children. The child may first practise with bread pills until it is able to swallow them easily.

TREATING THE CHILD'S NOSE.

The throat is *sprayed* with an atomizer, the tongue being well depressed so that the solution reaches the throat.



Spray Apparatus or Atomizer.

When the nurse has to make an *application* to the child's throat, she should wrap the child in a shawl and hold it so

that it faces a bright light. With a spoon in one hand, and a large, straight camel's hair brush, firmly fastened to a straight, stout stick, in the other, the nurse takes her position opposite the child. Carefully inserting the handle of the spoon between the teeth she gradually and gently works it inward. As the back of the tongue is reached the child gags and opens its mouth widely. At that moment with the brush moistened in the solution, she rapidly and thoroughly paints the throat.

Local Applications of Heat and Cold.—The various methods of applying cold, and dry or moist heat locally are given in chapter XXXIII.

ADMINISTERING A RECTAL INJECTION TO A CHILD.

In giving an *enema* to the child one may use an infant's syringe, consisting of a soft rubber bulb with a hard rubber nozzle, or an ordinary hard rubber syringe holding four to six ounces and fitted with a piston which moves easily. The bed should be protected by a rubber sheet and a folded sheet or towel. The patient lies on his left side near the edge of the bed with his hips and knees flexed. After the fluid has been drawn into the syringe, the nozzle is well oiled or greased with vaseline and gently inserted into the rectum upward, backward and to the left. No force must be used or the rectum may be perforated. The fluid is injected very slowly and should be retained for ten or fifteen minutes. To aid in this retention, the nozzle is gently removed and a folded towel is pressed against the anus. Sometimes in cases of inflammation of the bowels it is necessary to give a *large injection.* For this a fountain syringe may be used, or a long rubber tube fitted with a funnel at one end and a catheter at the other, or an ordinary elastic bulb syringe, although this last is not so desirable. The child

should lie upon its back or on its left side for this injection, which should be given very slowly. Wrapping a narrow roller bandage firmly around the nozzle of the syringe will help to prevent the fluid from being ejected while the injection is being given. To help the child in retaining the injection the nurse may hold the cheeks of the buttocks together or apply pressure with a clean towel laid against the anus.

ATTENTION TO THE URINE.

The urine must always be measured and an accurate record kept of the amount voided in the twenty-four hours.

When a patient has gone as long as six hours without passing water, means must be taken to excite urination. Hot applications may be made over the loins, lower portion of abdomen, and external genitals. A hot sponge may be placed between the thighs, or a bed-pan containing steaming water inserted beneath the hips. The sound of running water will sometimes stimulate the bladder to act. Catheterization should be performed only by a physician or trained nurse and with surgical cleanliness or asepsis.

CHAPTER XXXII.

THE COMMON AFFECTIONS OF INFANCY AND CHILDHOOD.

The Highly Contagious Diseases: Measles, rubella, scarlet fever, diphtheria, membranous croup, small-pox. The management of a highly contagious disease. Isolation: Preparation of the room; method of disinfecting the linen, hands, dishes, vessels, urine and feces; the nurse's attire; care of the food; frequent disinfection; disinfecting the mouth and nose; convalescence; disinfecting the sick-room; disinfecting the bedding and clothing; disinfecting a privy, etc. Care of the body after death. Quarantine. The Management of the Mildly Contagious Diseases: Chicken-pox, whooping-cough, typhoid fever, consumption. The Intestinal Disorders of Infancy.

"Good Christian people, here lies for you an inestimable loan; take all heed thereof, and in all carefulness employ it, with high recompense; or else, with heavy penalty, will it one day be required back."

—*Carlyle.*

NO attempt is made in this book to teach the diagnosis and treatment of all the diseases of infancy and childhood. A woman need not suppose that with a few minutes reading she can obtain the knowledge that a medical man must spend years in acquiring. Whenever a child is sick the mother should send for a physician. Valuable time is often lost by waiting too long.

It is nevertheless necessary for every mother to know how to tend a child when it is sick. Consequently in this chapter precise and definite instructions are given as to the management of sick children when suffering from any of the common affections to which they are subject.

From the standpoint of nursing, children's diseases may be divided into certain groups. The author has classified them as the highly contagious diseases, the mildly contagious diseases, and the digestive disorders. The management of the particular disease depends altogether upon the group to which it belongs. Strict isolation, for instance, is necessary in the first group but not in the others.

THE HIGHLY CONTAGIOUS DISEASES.

Nature of the Highly Contagious Diseases.—Measles, rubella or German measles, scarlet fever, diphtheria and membranous croup, and small-pox are highly contagious diseases, communicated directly from one person to another, or from clothing, rags, and the like, which have been in contact with the sick person, or from the various discharges—sputum, urine and bowel passages—of a person sick with the disease. Insects and domestic animals may also carry contagion.

Measles is the most frequent and the most contagious disease known. Prominent symptoms are a heavy, stupid expression, running of the eyes and nose, inability to stand the light, cough, and a typical rash. When such symptoms occur the child should be isolated and a physician sent for. It is an error to regard measles as a disease of little consequence. Thousands of cases every year prove fatal, in many instances through a complicating pneumonia or consumption.

Rubella, popularly known as German measles, is a mild affection in which the rash is the most pronounced symptom.

Scarlet fever is usually attended with a scarlet eruption of the skin, and is generally accompanied by a sore throat. When a child has a sore throat and a fever, especially if accompanied with an eruption on the skin, it should be imme-

A CLASSIC MOTHER AND MATERNAL LOVE.

This copy from a famous painting is beautiful as a study not only of womanly symmetry, proportion and loveliness, but also in its grouping shows the freedom and grace of children born under favoring conditions.

diately separated and kept secluded from all persons, excepting one necessary attendant, until a physician has determined that such isolation is unnecessary.

Diphtheria may affect the nose, the upper or back part of the throat, and the lower part of the throat, or larynx. This last condition is known as *membranous croup*. When a child has a sore throat showing even a small whitish spot, has a bad odor to its breath, and especially if it has fever, it should be immediately isolated until seen by a physician.

Small-pox can be so easily prevented by such a simple means as vaccination (see page 333) that it should never appear in a civilized community; a consideration of its symptoms therefore is mere waste of time.

THE MANAGEMENT OF A HIGHLY CONTAGIOUS DISEASE.

No matter what the method of treatment adopted in scarlet fever, diphtheria and small-pox, the principal feature of the nursing is prompt and thorough isolation of the patient during the continuance of the illness, and thorough disinfection after the patient has recovered. The same precaution should be adopted in cases of measles, but may be modified for rubella.

Isolation.—By thorough isolation is meant the seclusion of the patient in such a manner that the danger of transmitting his disease to others is reduced to the lowest practicable point. The only persons to enter the room should be the physician and the nurse, and neither should leave the room without being first thoroughly disinfected. Placing the patient in a room by himself would by no means be sufficient to prevent contagion if articles and persons with which he comes in immediate contact were allowed to circulate through the house.

Abbott says that "isolation means more than merely confining the patient to a separate room or building. It com-

prises in addition to this the employment of a separate attendant who comes in contact only with the patient or patients for whom he or she is employed to care; the disinfection of all infected matters as soon as they are passed from the patient, and before they leave thè sick-room; the disinfection of all bed and body-clothing as soon as they are removed from the patient, and before they leave his apartment; the provision of separate eating utensils, handkerchiefs, towels, napkins, clinical thermometers, tongue depressor and other instrumental accessories; the frequent cleansing with disinfecting solutions of the sick-room and its furniture; the frequent general bathing of the nurse; and especially the careful disinfection of the hands after each manipulation of the patient."

Preparation of the Room.—The patient should be placed in a room prepared as described in the preceding chapter. *Screens* should be placed in the windows to keep out flies and other insects which may help to disseminate the disease. A *sheet* kept continually wet with a one per cent. solution of formalin, a five per cent. solution of carbolic acid, or, safest, a solution of chloride of lime*—one-half pound of chloride of lime to a pail of cold water, should be hung outside of the door. The sheet is kept wet by being sprayed or sprinkled with the solution, or by being immersed in it from time to time.

Method of Disinfecting the Linen.—A large vessel, such as a tub, containing a solution consisting of carbolic acid three parts, common soft soap two parts and water one hundred parts, and kept covered, if possible, should always stand in the room. When the bed and body linen are soiled by evacuations, secretions, or excretions, the tub is brought to the bedside and the clothes are removed with as little agi-

*This is the popular name for chlorinated lime. The two terms are used interchangeably in this chapter.

tation and commotion as possible and at once immersed into the solution. As soon as they are thoroughly saturated the cover is replaced and they are allowed to soak for two hours. The cold carbolic-soap solution not only disinfects but dissolves out all stains as well. The clothes should then be wrung out and placed in a receptacle such as a bucket standing outside the door and may then be carried to the laundry without danger.

Whenever possible, one should provide a small gas stove and a wash boiler of about four gallons capacity into which all small infected articles, such as napkins, handkerchiefs, towels and the like, should be immersed, to be steamed or boiled in water or soda solution before they are sent to the laundry. Where this cannot be obtained the small articles should be placed in the tub in the carbolic-soap solution.

Dishes and Vessels.—All glasses, cups and other vessels used by or about the patient should be boiled or placed in a solution of chloride of lime before being removed from the room.

Disinfection of the Urine and Feces.—The urine and the bowel discharges should be received into vessels containing a solution of four fluid ounces of carbolic acid to the gallon of water, or of four ounces of the best chlorinated lime to the gallon of water. The vessel should be covered, and the discharge allowed to remain in contact with the disinfectant for at least half an hour before being thrown out. These evacuations may also be disinfected in the manner described later in this chapter in connection with typhoid fever.

Receptacle for the Sputum.—A spit-cup, such as described on page 339, or a basin containing chlorinated lime or a five per cent. solution of carbolic acid, or some other efficient disinfectant, should be kept constantly at the patient's side for him to spit into.

Care of the Food.—Food for both the patient and the nurse should be placed outside the door whence it may be taken into the room by the nurse. All eating utensils should be placed in a chloride of lime solution after being used. What is left from the meal should be thrown into a covered receptacle containing milk of lime or the solution of chlorinated lime. Milk of lime is made by slaking a quart of finely divided, fresh formed lime in one quart of water, then adding three quarts of water and stirring the mass thoroughly.

Disinfection of the Hands.—There should always be ready and convenient a basin containing a solution of chloride of lime—one-half pound of chloride of lime to a pail of cold water, of chlorinated soda in the proportion of two fluid ounces to the quart of water, or of formalin in the strength of 1 to 500, another basin containing plain water, and a good supply of towels, so that the hands of the nurse may be disinfected and then scrubbed with soap and water immediately after having been brought into contact with the patient.

The Nurse's Attire.—The patient and the nurse should remain in the sick-room and must not come in contact with anyone else in the house. It is advisable for the nurse while in the room to wear a cap which completely covers her hair, a long gown which reaches from her neck to the tops of her shoes and covers her dress completely, and loosely fitting carpet overshoes. Before leaving the room the nurse should remove her cap, gown and overshoes and, after disinfecting her hands in the chloride of lime solution, wash her face, neck and hands with soap and water. She should leave her gown and overshoes near the door so that she can put them on as soon as she enters again. When passing through the house to take out-door exercise she should go straight out without stopping.

Frequent Disinfection.—At least every second day the floor and all horizontal surfaces, such as window-sills, mantels, furniture, knobs of doors, etc., should be wiped with cloths moistened with a three per cent. solution of carbolic acid or the chloride of lime solution described. Instruments such as tongue depressors and clinical thermometers which may frequently be required should be kept in a disinfectant solution of chloride of lime or 1 to 20 carbolic acid.

Disinfecting the Mouth and Nose.—As the discharge from the nose and mouth is contagious in this group of diseases, the nose and mouth of both patient and nurse should be sprayed with a disinfectant solution, each, of course, using a different atomizer. The best spray for the throat is a solution of formalin one to five hundred; for the nose a milder disinfectant must be used, such as phenol sodique, glyco-thymoline and similar preparations. Pocket handkerchiefs should not be used, but small pieces of muslin should be employed instead for wiping the mouth and nose. These pieces after once being used should immediately be burned.

Care of the Body.—The patient's skin should be bathed frequently with a weak alcoholic or with a mildly disinfectant solution. In diseases such as scarlet feaver and measles, where there is scaling, the skin should be greased with olive oil or sweet oil, carbolated vaseline, cocoa butter, benzoin, or carbolated lard, etc., to prevent the particles from entering the air.

The nurse should avoid as much as possible going too close to the patient, especially avoiding hanging over the bed.

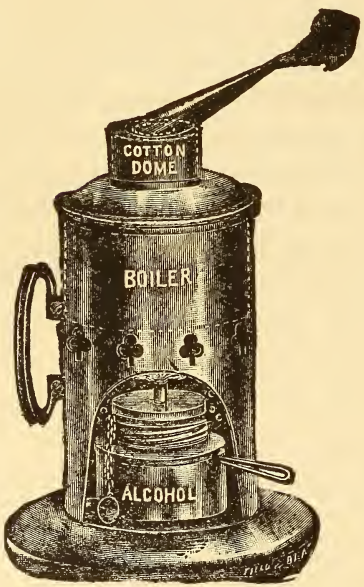
Convalescence.—The isolation should be continued until all danger from contagion is passed. In diseases associated with a rash this danger is not over until desquamation is completed and there is no sign of scaling on any part of the body. A diphtheria patient cannot be allowed out until several bacteriological examinations of the nose and

mouth show that there are no diphtheria germs present there.

Removal from Isolation.—Before the child is removed from the sick-room it must have a disinfecting bath in a solution of bichlorid of mercury in the strength of 1 to 4000. The child may be sponged with this solution or be immersed in a bath tub. It is then dried with towels which have never been in the sick-room, removed to another room and dressed in clothing which has not been in the sick-room or has since been disinfected.

DISINFECTING THE ROOM.

The Different Methods of Disinfection.—A room may be disinfected in various ways: by spraying a solution of formalin; generating formaldehyde gas from its watery solution, from methyl-alcohol, or from solid tablets of polymerized formaldehyde; and generating sulphur dioxide by burning brimstone or prepared sulphur candles. For each one thousand cubic feet of air space to be disinfected, one pound of formalin, one quart of methyl-alcohol, fifty to seventy-five solid tablets of polymerized formaldehyde or three pounds of sulphur should be used. The most effective method is that of spraying a solution of formaldehyde, a procedure that can be carried on only by an experienced person. It is the method that has been adopted by the Board of Health of Philadelphia as being the most satisfactory. In the large cities the Board of Health usually will undertake the disinfecting of a room free of charge. Sulphur destroys germs only when acting on moist objects, and is of little value.



How to Disinfect a Room.—If an apparatus generating formaldehyde gas is used it may be placed in the center of the room and ignited. There is an improved apparatus by which formaldehyde gas may be generated from its watery solution outside of the room and introduced by means of a tube thrust through the key-hole. When sulphur is employed it should be used in the form of powder or in small pieces which should be placed in a shallow iron pan set upon a couple of boards in a tub partly filled with water. The sulphur should be moistened with alcohol before it is set on fire.

The windows should then be fastened, the doors locked, and the crevices and key-holes sealed by sticking adhesive paper over them, or by plugging them with rags or papers. The room should remain closed for six hours, after which it should be well aired for several days, the doors and windows being thrown wide open.

Airing and Cleansing after Disinfection.—As soon as the fumes have disappeared so that a person can remain in the room comfortably, the ceiling, walls and all horizontal surfaces, such as window-sills and mantels, should be wiped thoroughly with cloths wrung out of a four per cent. soda solution, or of a fresh solution of chloride of lime. The floor is then to be scrubbed with a four per cent. soda solution. All hangings, curtains and carpets which have remained in the room should be removed after disinfection and thoroughly beaten or shaken on an open lot and then freely exposed to direct sunlight. It is better to remove the wall paper after moistening it with a soda solution.

After the room has been disinfected and cleaned it should be thoroughly aired for a few days before it is again occupied.

When Complete Isolation is Impossible.—When in the more serious diseases such as scarlet fever or diphtheria it is impossible to practice perfect isolation, it is better to send

the child to a hospital, especially if there are other children in the house. If, however, a mother insists upon tending the sick child and also coming in contact with the well members of the family, she should be careful to wear the cap and gown while in the sick-room and to disinfect herself thoroughly before she leaves the room.

Thorough disinfection, however, is always possible. Anything less is foolish, furnishing no protection, while giving a false sense of security.

DISINFECTING THE BEDDING AND CLOTHING.

The City Disinfection Station.—Steam is the best disinfectant for clothing. Many of the larger cities have a municipal disinfection station, under the management of the Board of Health, where articles may be disinfected by steam free of charge. The bedding and clothing should remain in the room while it is being disinfected and afterwards should be packed in a tightly closing canvas bag and conveyed to the disinfection station.

Disinfecting Clothes at Home.—Spraying the clothes, however, with a strong solution of formaldehyde is an efficient means of disinfecting them. They should be sprayed when the room is being disinfected, and remain in the room while it is closed up. Another method is to hang the clothes loosely in a closet, and generate the vapors of formaldehyde by burning a lamp for decomposition of solid tablets of polymerized formaldehyde, which should be used in the proportion of seventy-five for every one thousand cubic feet of air space in the closet. The door of the closet must be kept closed and sealed while the formaldehyde is being generated, and should remain so for twenty-four hours afterward.

Boiling for at least half an hour is one of the surest ways of disinfecting contaminated clothing.

PREPARING DAINTY DISHES.

It is woman's pride to skilfully and intelligently prepare healthful food, and such as is adapted to the needs of her family. She should be familiar with the principles of cooking as given by an authority.

Care of the Body After Death.—When a child has died of scarlet fever, diphtheria or small-pox its body should be at once wrapped in a sheet saturated with a five per cent. solution of carbolic acid or a chloride of lime solution or a one to one thousand corrosive sublimate, or a four per cent. formaldehyde solution, and immediately placed in its coffin or casket which is then closed. Burial or cremation should occur as soon as practicable. In most States the law forbids public funerals in these cases.

DISINFECTING A PRIVY, CESSPOOL, ETC.

After any contagious disease has occurred, the privy vault or cesspool should be disinfected, two and a half pounds of chlorinated lime being used for every eight gallons, or about one cubic foot, of fecal matter contained in the vault. The disinfectant should be dissolved and applied in solution so as to mix better with the fecal matter.

THE ESTABLISHMENT OF QUARANTINE.

Small-pox is such a highly contagious disease, and so dangerous to a community in many ways, that in addition to isolation the establishment of a quarantine is usually necessary. When a house is quarantined no one is allowed to enter or leave it. As a rule, an officer of the law is stationed at the doors to prevent any communication between the people in the house and those outside. The quarantine is usually maintained until all danger of the occupants of the house contracting the disease has passed. Small-pox, however, is an absolutely preventable disease, a successful vaccination protecting the individual from attack for a period of not less than four years.

VACCINATION.

Vaccination an Absolute Preventative of Small-pox.—No one has ever taken small-pox within four years of a successful vaccination. During the epidemic of 1901-1902, seven-

teen hundred small-pox patients were treated at the Municipal Hospital, Philadelphia. Not one of these had been successfully vaccinated within four years. In this same hospital are physicians, nurses and attendants who come in close contact with the most virulent cases of small-pox. Women scrub the wards, wash the patients' dishes, and their bed and body-clothes. Not one has ever contracted the disease, because all had been recently vaccinated successfully.

In 1875 a law was introduced in Germany commanding vaccination at birth, and at the tenth year. From 1816 to 1870 out of every 100,000 people in Prussia, eight to sixty-six died of small-pox every year. In 1871, two hundred and forty-three, and in 1872, two hundred and sixty-three died out of every 100,000. Between 1875, when the law was passed, and 1886, the average number of deaths for every 100,000 of the population was a little less than two.

When a Person Should be Vaccinated.—A person should be vaccinated in infancy, and about every ten years after that. During an epidemic no one should go longer than four years without being re-vaccinated.

No Danger from a Properly Performed Vaccination.—There is little danger from a vaccination if it is performed in a proper manner and is carefully attended to afterwards.

The Best Time for Vaccination.—The best time to vaccinate an infant is when it is four or five months old. If the vaccination is performed between the sixth and twentieth months, it should not be done while the child is teething, nor at a time when the food is being changed, nor when the child is suffering from any disease. The outside of the upper arm is the usual place for vaccination, but in girls the outside of the leg just below the knee is sometimes considered more desirable. When exposed to small-pox one must be vaccinated immediately.

Method of Vaccination.—The surface of the skin should be thoroughly cleansed with soap and water, and then with alcohol. Chemical disinfectants should not be used, as they interfere with the action of the virus. After the vaccination has been performed, the virus should be allowed to dry for a few minutes. The part should then be protected by a simple gauze dressing kept in place by strips of adhesive plaster, by a new bandage, or by a piece of muslin which has been sterilized. Shields are not desirable. Every day until the vaccination wound has healed the dressing should be removed and the part washed with soap and water and then with a disinfectant solution, after which a fresh dressing should be applied.

THE MILDLY CONTAGIOUS DISEASES.

Chicken-pox, whooping-cough, mumps, typhoid fever, and consumption may be regarded as the mildly contagious affections. The diseases included in this group are all communicable; they are caught by one person from another. Not all, however, are carried by the air or by a third person. The contagion resides in the sputum or saliva or in the bowel evacuations. Consequently the management differs somewhat from that of the diseases just studied.

CHICKEN-POX.

Chicken-pox is the mildest of all the contagious diseases and seldom has an unfavorable termination. As the disease is contagious the child should be kept away from other children until all traces of the disease have disappeared. It should be confined to the house, put upon a milk diet, and carefully watched to prevent scratching or picking at the spots. As a rule, no other treatment is required. As other diseases are frequently mistaken for chicken-pox, a doctor should be called in whenever the child presents a suspicious eruption.

In no case, however mild, must the patient mingle with other children within two weeks of the date of onset.

WHOOPING-COUGH.

Whooping-cough is a more serious disease than is generally supposed, especially in young infants and in children who are debilitated or poorly cared for. Many children die from its effects, pneumonia and consumption being the most frequent complications. It is a contagious disease, communicated directly from one person to another.

The Symptoms of Whooping-cough.—The disease begins as a cough, which gradually gets worse, after a period averaging two weeks occurring in paroxysms. The child gives a number of short, spasmodic coughs, rapidly repeated without drawing the breath, and continued until it is nearly blue and its eyes protrude. It then makes a long-drawn inspiration with a peculiar loud crowing sound, called a whoop. These paroxysms are often followed by vomiting, and usually by the expulsion of a large amount of stringy mucus. The stage of this paroxysmal cough and whoop commonly lasts from three to four weeks or even longer. The cough then becomes looser, the paroxysms less severe, and the whoop less frequent, ceasing entirely after three or four weeks.

Management of a Child with Whooping-cough.—The child should be kept away from other children during the whole course of the disease. When the whoop distinctly ceases over a period of some days, the disease may be said to be over, although the whoop may later begin again, as a sort of habit. A physician should always be consulted on account of the seriousness of the disease and the dangers of its complications. The child should have plenty of fresh air without being exposed to draughts and should be warmly clothed. It must remain away from public gatherings.

An infant with whooping-cough ought never be left

alone. It must always be taken up when a paroxysm is approaching. During the paroxysm the infant should be held in different positions, and at the end its head and body should be bent forward so as to aid in the expulsion of the tenacious mucus. At times if the finger, covered with a clean cotton cloth, be quickly introduced into the throat it may withdraw the mucus in this way, being then disinfected.

A change of air, either at the country or at the seashore, may be of benefit in protracted cases.

MUMPS.

Mumps is a contagious disease, characterized by inflammation and swelling of the gland that is situated in front of and behind the ear, and sometimes of a gland below the jaw. The attack lasts from a few days to a week. The period of contagion, however, lasts much longer. The child should be isolated or kept away from other children for at least three weeks from the onset of the disease or, in prolonged cases, until ten days or two weeks have elapsed after the disappearance of the swelling.

TYPHOID FEVER.

How Typhoid Fever is Communicated.—Typhoid fever is not, strictly speaking, a contagious disease but it is communicable, the infection occurring by way of the digestive tract. There is only one manner in which typhoid fever is transmitted: by swallowing materials that have come directly or indirectly in contact with the bowels of individuals affected with the disease. The disease is carried by means of water, green vegetables—as lettuce and celery, and oysters, etc., which have become contaminated by the discharges of a typhoid fever patient. Hands that have come in contact with such a patient, with infected body linen, or with anything else soiled by discharges of a typhoid fever patient, may

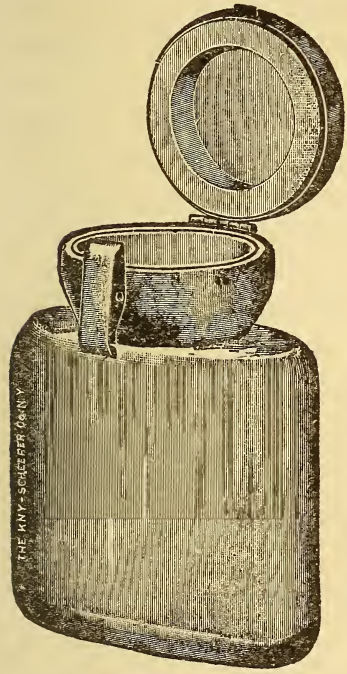
carry the disease indirectly by infecting the food that they touch, especially in handling milk at the dairy or in the kitchen. The disease is also carried by flies, which pass from the discharges to the food.

Care of a Typhoid Fever Patient.—The proper care of a typhoid fever patient is the most important factor in the prevention of the spread of the disease. This is accomplished by prompt disinfection of all discharges from the patient. The bowel evacuations should be mixed with double their volume of chloride of lime, of milk of lime or of boiling water or of a boiling two per cent. soda solution. The vessel should then be covered and allowed to stand for from one to two hours before being emptied. All bed and body clothing, all napkins and towels used about the patient, and all eating utensils should be disinfected according to the method previously described. (See pages 326 and 327.) Stains may be removed as directed on page 314. All valueless articles used about the patient should be immediately burned. After attending to the patient the nurse should immerse her hands for several minutes in a disinfectant solution, and then scrub them thoroughly with warm water, soap and a nail brush.

CONSUMPTION OR TUBERCULOSIS.

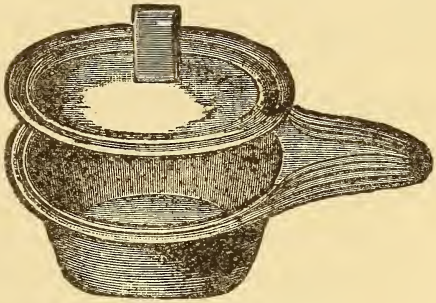
Care of the Sputum.—In diseases such as consumption (and also pneumonia), in which the sputum is contagious, the child should expectorate into a suitable vessel containing a disinfectant solution of carbolic acid or chlorinated lime and kept covered to keep out insects. The child may have his individual sputum cup, which is best made out of metal so it cannot break. The sputum should be destroyed by boiling for twenty minutes in a solution of one ounce of washing soda to a pint of water or by the addition of a teaspoonful of ordinary wood vinegar to each ounce of sputum.

Paper cups may be used which can be destroyed by fire. Dr. Knopf has devised a sputum flask which can be carried in the pocket. A pasteboard cup in a metal holder or a tin cup into which a newspaper has been folded all around may be



Pocket Sputum Flask.

Ordinary Spit Cup.



Sanitary Spit Cup.

This is made of pressed paper, with cover and handle, and is destroyed by burning.

used, the paper being frequently removed and burned. If found more desirable, the child may expectorate into cloths or Japanese paper napkins. These must be promptly burned or placed in a muslin or paper bag, which is later to be burned with its contents. The patient should never spit into a handkerchief or towel which is to be washed and used again.

The Life of a Consumptive.—In order to guard against contagion a consumptive should never kiss. All cups, spoons and other articles used by him should be boiled or otherwise disinfected. Each patient should have his own set of utensils.

Consumption is a disease treated less by drugs than by hygienic measures. A child with consumption or with a family tendency toward it should observe most strictly all the rules laid down in the first part of this book. He must live out of doors as much as possible and have plenty of air in his sleeping room. His diet should consist of an abundance of good, nourishing food, especially of milk, eggs, butter and oil. When exercising he must always stop short of fatigue. The breathing exercises described in chapter IV, especially those associated with arm movements, are particularly useful. Every morning the child should take a hardening bath.*

A child should never be allowed to have a chronic cough without a physician being consulted.

THE INTESTINAL DISORDERS OF INFANCY.

The intestinal disorders of infancy occur usually in the summer time, and especially among children who are fed upon artificial food. They are sometimes produced by chilling of the skin. As they frequently are caused by improper feeding, they may often be prevented by observing the directions given in chapters XXIV and XXV.

SYMPTOMS OF INTESTINAL DISTURBANCES.

These symptoms are not in any way diagnostic.

Vomiting.—Vomiting differs from the simple regurgitation that occurs when the baby has been overfed. It is accompanied by coldness, pallor, and moisture. A common occurrence in children, it has not the same significance that it has in adults. Almost all the acute diseases of children are ushered in by vomiting.

Diarrhea.—An infant attacked with diarrhea may have from four to forty passages in twenty-four hours. The

* See chapter II.

evacuations may be greenish, yellowish-green, whitish, clay-colored, black, brown, or even colorless. Their consistency may be semi-liquid or very watery. They may be extremely offensive or may have no odor at all. Their size varies from small to very large. Serum or water, mucus or slime—resembling the white of egg, and blood may be present.

Pain.—Pain in the abdomen may occur occasionally or very often. It may precede each movement of the bowels or may be followed by the expulsion of gas from the mouth or from the bowels. When in pain the baby suddenly cries violently, alternately doubling and straightening its legs, arms, and trunk. This may continue until the child is bluish in the face and is exhausted and cold. The pain then suddenly ceases.

Fever.—In the severe affections of young children the fever is high. The various degrees of inflammation of the stomach and bowels are usually accompanied by moderate fever.

Wasting.—The most alarming symptom that appears in intestinal disorders when associated with diarrhea, is the rapid falling away in flesh. An infant may lose a great deal of weight in a single day and before many hours may become shrivelled, wrinkled and cold, the fontanelles being depressed and sometimes the bones of the skull overlapping.

THE CARE OF AN INFANT WITH AN INTESTINAL DISORDER.

Owing to the marked changes that can occur in such a short space of time, when a baby begins to lose flesh and weight a physician should be consulted at once. In mild cases, however, and in serious cases before the physician arrives, there are many things a mother can do.

Diet.—In the first place all nourishment must be withdrawn immediately. For the first six hours no food at all should be given. Later the baby may have small amounts of barley-water or albumen-water.

Barley-water is prepared by putting one rounded tablespoonful of whole barley into an enamelled saucepan of water, boiling for not more than five minutes and then throwing the water away. To the washed barley one quart of water is added and allowed to simmer slowly down to one pint, and then strained. When, in place of whole barley, a barley flour is used it is prepared by rubbing up one rounded dessertspoonful of barley flour with a little cold water, stirring it into one pint of water, and allowing it to simmer for fifteen minutes with stirring and straining.

To prepare *albumen-water* dissolve slowly the raw white of one or two eggs in a glass of cold water. Sweeten if desired and strain only if necessary to prevent clogging of the rubber nipple by minute shreds. It may be warmed slightly before being given.

Rest.—The child should lie quietly, preferably in bed. It must not be raised suddenly or trotted on the knee. During an attack of wind colic, however, the child's position may be changed; the baby may be lifted over the shoulder, and its abdomen may be rubbed for several minutes. This may aid in the expulsion of gas.

Clothing.—The abdomen, arms and legs should be carefully covered with close-fitting garments, suitable to the season, as described in chapter XXVII. The feet should be encased in thick, loose socks. An abdominal binder may be worn. A small hot-water bag may be applied to the stomach for colic if the child permits. For colic Griffith advises daily friction of the feet with a mixture of one part of turpentine and three parts of sweet oil.

External Remedies.—For vomiting a spice or mustard plaster may be placed just below the ribs in the median line and a short distance to the left of it. A spice plaster over the abdomen often relieves colic.

To prepare a *spice plaster* take one part each of ground

ginger, cloves, cinnamon, and allspice; one-fourth part of cayenne pepper is added if the plaster is to be strong. Spread the dry and well-mixed powder evenly in a flannel bag, and then quilt the bag. Before applying the plaster wet it with hot alcohol or hot whiskey. The same spice-bag may be used repeatedly until it loses its strength.

A *mustard plaster* or poultice is made by mixing one part of mustard with three, four, or five parts of flour or flaxseed meal. Boiling water is added and the mixture is stirred until it is of the proper softness, when it is spread on a cloth and applied directly to the skin or with a layer of linen or some other thin material intervening. It should be kept on until the skin is well reddened, but not long enough to blister.

If the baby seems to have fever it may be bathed with cool water; if cold and clammy it should be given a hot bath or a mustard bath.

Internal Medication.—The physician should decide what medicines are to be given. Under no circumstances should the mother give opium in any form. Nearly all the various soothing syrups and other infant remedies contain opium. All these are very dangerous when given to an infant and all have their share in the many deaths occurring every summer among infants. The soothing syrup or the few drops of laudanum or paregoric will no doubt cause the baby to sleep, but too often the little one never awakens. The medicine that always may be given at the beginning of an illness is castor oil or calomel. Colic is often relieved by an enema. Soda-mint may be given to relieve vomiting or colic. It should be mixed with an equal quantity of hot water and be given every half hour or hour. The dose at one year of age is a teaspoonful. In cases of diarrhea, until the doctor arrives, doses of chalk mixture may be administered after the oil has acted.

PART V.

DISEASES PECULIAR TO WOMEN.

CHAPTER XXXIII.

SYMPTOMS OF WOMEN'S DISEASES AND THEIR TREATMENT.

Symptoms of Women's Diseases: How to observe pain; its location, character, degree, duration, frequency, modifications; danger-signals. Temporary treatment of pain: Headache, pain in the abdomen, backache. Discharges: White (leucorrhea), yellow, bloody; Their prevention and treatment. Pruritis or itching: Its cause and treatment. Constipation: Correction without drugs, by habit, exercise and diet.

"A stitch in time saves nine."
—*Old Proverb.*

THE structure and functions of the female generative organs have been described in chapter VIII. These organs, like those in other parts, are liable to diseases or injury. The study of the diseases peculiar to women is called gynecology. Whenever any symptoms occur which seem to be caused by an abnormal condition of these organs, a physician should be consulted.

The purpose of the present chapter is to show women how to observe these symptoms, that they may report them properly to a physician, and how to temporarily manage and relieve them when severe and acute, pending the physician's arrival.

Frequently the real condition from which a woman is suffering lies unrecognized because of her inaccurate observation and description of her symptoms.

It is not always possible, especially in the country, to procure a doctor at a moment's notice. In such a case a woman may have to suffer for hours, unless she be able to

obtain temporary relief. For these emergencies when no physician is available, it is important for the woman to know what is to be done.

A woman, however, must not be continually on the lookout for symptoms; she should not always be examining herself to see if she is normal. Such a practice produces a nervous disorder, a condition bordering close on to insanity, known as hypochondriasis or morbid introspection. Unfortunately any description of symptoms has a tendency to make hypochondriacs of its readers.

In this book, all such description will be avoided as much as possible. Instead, the way to observe symptoms will be detailed. Only in the case of danger-signals, when the life of a woman depends upon her early recognition of the first warnings, will the symptoms themselves be fully described.

HOW TO OBSERVE PAIN.

When suffering from pain, a woman should notice its (1) location, (2) character, (3) degree, (4) duration, (5) frequency and (6) modifications.

The location is a matter of importance. The seat of pain should always be pointed out to the doctor with the finger, rather than be described. Many women have incorrect notions as to the names of the different parts of their bodies, and call the abdomen or belly "the stomach," saying, they have a pain in "the lower part of the stomach," when they mean the lower part of the abdomen, a point far distant from the stomach. Few know the exact location of the various organs. Yet a woman will speak of "pain in the kidneys," though, as a rule, she refers to a spot below the position of these organs.

It is a mistake in any case to try to designate the exact organ which is imagined to be the seat of pain. Pain in the lower portion of the back, for instance, is so often

spoken of as pain in the kidneys, when it seldom comes from the kidneys at all. It may originate in the muscles, as a form of rheumatism, or in the nerves, as neuralgia or lumbago; or it may be due to displacements or disease of the generative organs, or to other conditions. If the woman will merely indicate with her finger the seat of pain, she will avoid making ridiculous and sometimes misleading mistakes.

Occasionally the pain is *transmitted* or shoots in a certain direction. When this occurs it should always be mentioned.

The character of the pain is often difficult to describe. It may be sharp, cutting, lancinating, stabbing or shooting, or dull, aching, gnawing, boring, throbbing, or burning. Sometimes it is cramp-like, coming in spasms. It may have a bearing-down character, or it may produce a peculiar sickening feeling.

Much may be learned by noticing the mode of *onset* of a pain, whether it is sudden, or gradual and continuously increasing in intensity.

Pains vary greatly in **degree**, from one very mild to one so severe as to cause fainting. A woman should always avoid exaggerating her sufferings, as she thereby may prevent her physician from making a correct diagnosis. On the other hand, she must not minimize the pain in an effort to appear brave or stoical. This is even worse than exaggeration.

A pain may be of long or short **duration**. It may be present all the time, as in many chronic conditions, or it may last a whole day or a few hours or only a minute or a few seconds.

The frequency of pain should be noticed. Some pains recur at regular intervals, separated by periods of freedom from pain. These are called intermittent or remittent pains.

When occurring at definite intervals, they are called periodic. When pains attack the patient in "spells," being extremely severe for a limited time, they are called paroxysmal.

The time of occurrence is important. Some pains occur only during the day and are said to be diurnal; others only during the night and are called nocturnal. Many occur just before meals, or shortly after, or several hours after. Pain may be modified in many ways. It is usually increased by pressure, but it may be relieved by it. As a rule, it is made worse by movement, but benefited by rest. Sometimes amelioration is produced by heat, at other times by cold. The climate, weather or season may also have an influence.

Symptoms that are Danger-Signals.—A woman should regard as a danger-signal of sufficient importance to warrant the immediate summoning of a physician, the occurrence of pain in the abdomen when severe and localized to one spot, or when associated with prostration, marked pallor, great abdominal tenderness, or chills and fever.

TEMPORARY TREATMENT OF PAIN.

Pain is Nature's notification or warning that an abnormal condition is present. The cause of a pain should be investigated and removed by treatment, for which the services of a physician are required. The pain itself is seldom treated, yet there are times when the pain is so severe that something must be done to relieve it. Inasmuch as on such occasions a physician is not always within reach, it is important for a woman to be familiar with various expedients which may be tried before the doctor arrives. The procedures given in this chapter are of a temporary nature and only relieve the pain; they do not cure it. The measures adopted for the relief of pain depend upon the location of the trouble.

How to Relieve a Headache.—Headache is frequently benefited by a *cooling compress.* This consists of a handkerchief or cloth tied across the forehead and kept cold by being repeatedly wrung out of cold or ice water. The compress must never be allowed to become warm, but must be dipped in the cold water at frequent intervals.

In cases where this fails to relieve the headache, or even tends to increase it, the *stimulating cold compress* may be tried. Several folds of muslin or linen—a handkerchief will answer—are wrung out of cold water and applied to the forehead. Over this a band of flannel is placed, extending for an inch above and below the other and reaching around the head, being tied or fastened with pins. The inside linen bandage will soon become warm, but it must not be disturbed for at least an hour. It may then be again dipped in cold water and the bandages applied as before.

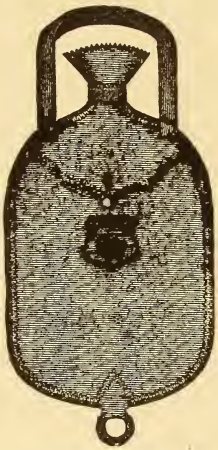
Where both the cooling and the stimulating cold compress fail to give relief, a *hot compress* or towel wrung out of hot water may be tied around the head, or a *menthol pencil* may be rubbed over the temples and brows. A hot *foot-bath,* with or without mustard, or a hot or cold hip-bath or *sitz-bath,* will often draw the blood from the head and thus relieve the headache. In every case a *cathartic* is indicated; often it alone will work a cure.

When the headaches always come while the eyes are being used for near work, such as reading, writing or sewing, the eyes should be examined by a competent oculist (not optician).

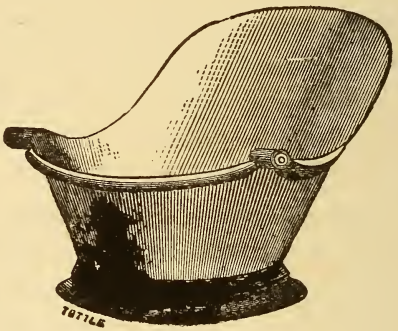
Attention to the hygienic rules, especially those in regard to work, rest, recreation and exercise, will aid largely in banishing headaches, which often are due to impoverished blood, overwork and lack of proper exercise, fresh air and sunlight. A general tired, languid, sleepy feeling, or a dull ache in the head, will frequently disappear after a

brisk walk or a game of tennis or tether ball. A woman subject to headaches should always consult a physician.

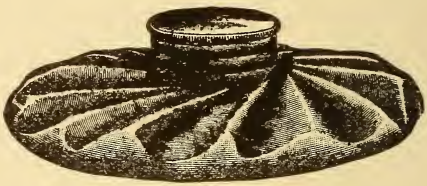
Abdominal Pains.—Pain in the abdomen may be benefited by local heat. This may be applied by means of a hot-water bag or of cloths wrung out of hot water, to which sometimes a teaspoonful of turpentine is added. A hot poultice of flaxseed or other material often soothes the pain.



Hot-water Bag.



Hip-bath or Sitz-bath.



Ice Bag.

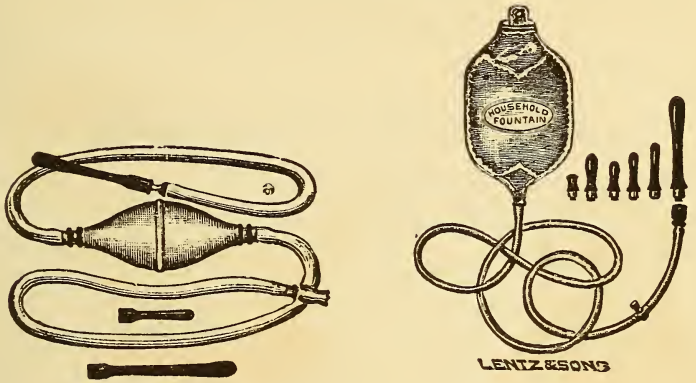
In cases where heat only increases the suffering, *cold* may be applied, usually in the form of an ice bag.

When the abdomen is pendulous and lacks support, the pain may be due to a dropping of one or more of the organs. In such cases with the wearing of an *abdominal elastic bandage* the pain often disappears.

When attacked with severe abdominal pain the woman should at once go to bed and send for the doctor.

If the pain seems to be in the lower portion of the

abdomen, or in the pelvis, it may be relieved by heat applied to the parts internally by means of a *vaginal douche*, also known as an injection. The bag of a fountain syringe should be filled with water as hot as can be borne, to which ordinary table salt has been added in the proportion of a teaspoonful to a pint. The bag should be hung low, so as



Forms of the Douche.

to let the water run out slowly; as it is the heat of the water that does the good, the injection should consequently last as long as possible. A douche-pan or other receptacle is required to receive the water as it leaves the parts.

PAINS IN THE BACK, OR BACKACHE.

Pain in the back may be treated temporarily in a similar fashion by heat or cold. The various plasters can do no harm in these conditions, and may do some good. Pain in the back is not normal, although it is experienced by so many women. It may be due to displacement of the womb, to a tear, to a movable kidney, to rheumatism or to other conditions. In every case an examination by a physician is advisable.

Backache is frequently caused by an improper mode of standing. Instead of the spine being held erect, the shoul-

ders are pulled back and the abdomen thrown forward, which position imposes a strain on the muscles of the back.

DISCHARGES FROM THE VAGINA.

Discharges from the vagina (described in chapter VIII) may be of three kinds, white, yellow, or bloody. They may be of little or of grave significance. A physician should always be consulted to find out the cause and to prescribe the treatment.

A WHITE DISCHARGE, OR LEUCORRHEA.

Cause.—Leucorrhea may be due to a *catarrh*, or an acute or chronic inflammation of the neck of the womb, the glands being congested and secreting a large amount of mucus, which finds its way externally. This condition is known as "leucorrhea" (from two Greek words, meaning "white flowing") or "the whites." It may be compared to "catarrh of the head," in which there is an increase in the mucous secretion of the nose, producing the excessive discharge.

Leucorrhea, as a rule, is caused by some local or general condition. Its most common cause is a *tear* of the neck of the womb, which sets up an inflammation. It occurs also when the uterus is *displaced* or *bent* into an abnormal position and also when after labor, miscarriage, or even menstruation, it fails to contract down to its normal size. The use of frequent douches of cold water to prevent conception is said to produce it. An obstinate form is sometimes due to *gonorrhea*. In women with a tendency to *consumption* a white discharge is common, its severity depending entirely upon the general health. Leucorrhea may also be due to *seat-worms*. The same occurs in *syphilis*.

The condition in many cases, especially where it occurs in young girls, is caused by a general state of *ill health;* in every instance the severity depends upon the general health.

The leucorrhea may occur only at those times when the general health is impaired by overwork, anxiety or by any other cause, and even when apparently cured, it is apt to reappear whenever the woman is subjected to such depressing influences.

Recognition.—Leucorrhea is recognized by the existence of a discharge composed of thick, opaque, tenacious mucus. With it may be present a slight backache and a feeling of vague discomfort or pain in the pelvis. An ordinary leucorrhea is not contagious in any way.

Treatment.—A physician must determine the cause. If the discharge be due to a displacement of the uterus or to a tear in the neck of that organ, it will not be cured until the tear is repaired or the womb put back in position. In many cases local treatment by the physician will be required. Hot douches, as described on page 353, will usually aid in hastening the cure and, in the absence of a local cause, will be the only local treatment required. In most cases the physician will prescribe a tonic. The bowels must always be kept regular. When seat-worms are the cause their removal effects a cure.

In every case, whether the discharge is due to a general state of poor health or to a definite local cause, general hygienic measures are always necessary. The only prevention is a strict adherence to the rules of correct living. The directions in the chapters on eating, bathing, clothing, exercise, rest, recreation and work, should be faithfully followed. Only by these means can leucorrhea be made to disappear as a common condition in women.

A YELLOW DISCHARGE.

The occurrence of a yellow discharge should receive immediate medical attention. It usually signifies gonorrhea,

which in women is a very serious affection, being responsible for a large percentage of her pelvic troubles.

A BLOODY DISCHARGE.

At any other time than the menstrual period, a bloody flow should be viewed with concern. A physician should always be consulted without delay.

Increase in the amount of blood lost at the menstrual period and slight bleeding in the interval, occurring in women over thirty years of age, demand immediate and careful examination. It may indicate something very serious.

Any bleeding from the vagina in a woman who has passed the menopause, or change of life, should arouse the gravest suspicion and be reported at once to the physician. Many dangerous and often fatal maladies begin in this way.

PRURITIS, OR ITCHING.

Pruritis vulvæ, or itching of the vulva or external parts, is an extremely annoying affection. It is sometimes so severe that it debars a woman from the society of her friends. Extension may occur to adjacent parts.

Causes.—Itching may be due to a great variety of causes. It may be produced by an *eruption* on the vulva, such as eczema, or by the irritating *discharge* of an inflammatory or cancerous condition of the womb. In children the presence of seat-*worms* or thread-worms often accounts for it. Itching frequently occurs in *diabetes.*

The treatment depends largely on the cause, usually consisting in its removal. The services of a physician are often required to determine the cause and to prescribe treatment. In a severe and intractable case a physician should always be consulted.

In mild cases, and on the first occurrence of itching, there are many things a woman can do. If an irritating discharge be present, it should be treated as just detailed. The parts should be kept clean by frequent douches. A pledget of cotton should be inserted to absorb the discharge and should be renewed as required. The stools of children should always be examined for the thread-worm. Various dusting powders may be used. An excellent one consists of equal parts of bismuth subnitrate and prepared chalk. Ordinary talcum powder is very serviceable.

CONSTIPATION.

The great majority of women are constipated. Many will go a week without having a passage; some go even longer. The regulation of the bowels is largely a matter of habit. Medicines are of little use as a cure, although they may act for a short time. Such drugs as castor oil, salts, licorice powder, magnesia, A. S. & B. pills, and so forth, should never be taken regularly, as they lose their effectiveness with continued use. A woman should accustom herself to habits of regularity. A sedentary life without exercise is the commonest cause of constipation.

Treatment.—This condition may be corrected by *exercise*, especially by those described in chapter IV. *Massage* of the abdomen may be employed as a substitute for active exercise. Plenty of *water,* hot or cold, should be taken. A glassful on getting up in the morning and another at bedtime are useful.

Attention to *diet* may itself cure constipation. Vegetables, fruits and coarse breads should be taken freely. The vegetables that are most laxative are tomatoes, spinach, lettuce, asparagus, Spanish onions, salsify, cabbage and celery, especially spinach and tomatoes. The coarse cereals,

such as oatmeal, cornmeal and wheaten grits, and bread made of coarse flour, such as Graham, rye, corn, oats and whole wheat meal, also help to relieve constipation, as well as to prevent it. The addition of bran to ordinary flour makes an especially efficacious bread. Nearly all fruits have a laxative influence, which is most marked when they are taken alone. Honey and molasses are better than any medicine. It is well to take fruit, honey or preserves with each meal, or at least with breakfast.

BEWARE OF PATENT MEDICINES.

Thousands of women yearly dose themselves with patent medicines, little realizing that they are often taking as much alcohol as is contained in a similar quantity of whiskey. Beer, ale, stout and porter contain from three to eight per cent. of alcohol; Peruna contains twenty-eight per cent. Claret contains nine per cent.; Ayer's sarsaparilla, twenty-six per cent. of alcohol. A pregnant woman feels the need of a tonic and takes, for instance, Hostetter's or Baker's stomach bitters, each containing three or four times the amount of alcohol found in champagne; then in later years she wonders how her boy developed his taste for liquor. A woman cannot object to her husband wasting his wages on drink when she spends his money for Lydia Pinkham's vegetable compound which contains five times as much alcohol as is in his glass of beer. The need felt by a tired wife for Paine's celery compound is similar to the man's craving for whiskey.

But not alone on account of their intoxicating ingredients are patent medicines harmful. They often contain drugs which poison the system while seeming to benefit. Opium will soothe pain, but it does not cure the disease. The most dangerous of all the patent medicines are the headache

powders. These usually contain a substance which injures the heart. Occasionally the heart gives way at once; but as a rule it gradually grows weaker until an extra strain, such as an attack of the grip or some other disease overtaxes it and causes it to stop.

Intemperance, invalidism and death strew the pathway of the patent medicines.

To prove that the figures given in regard to these deadly mixtures are correct, the following list of the different patent medicines has been taken from an official document giving the percentages of alcohol in each as determined by the Massachusetts State Board Analyst:

	Per cent. of alcohol (by volume).
Lydia Pinkham's Vegetable Compound	20.6
Paine's Celery Compound	21.
Dr. William's Vegetable Jaundice Bitters	18.5
Whiskol, "a non-intoxicating stimulant"	28.2
Colden's Liquid Beef Tonic, "recommended for treatment of alcohol habit"	26.5
Ayer's Sarsaparilla	26.2
Thayer's Compound Extract of Sarsaparilla	21.5
Hood's Sarsaparilla	18.8
Allen's Sarsaparilla	13.5
Dana's Sarsaparilla	13.5
Brown's Sarsaparilla	13.5
Peruna	28.5
Vinol, Wine of Cod Liver Oil	18.8
Dr. Peter's Kuriko	14.
Carter's Physicial Extract	22.
Hooker's Wigwam Tonic	20.7
Hoofland's German Tonic	29.3
Howe's Arabian Tonic, "not a rum drink"	13.2
Jackson's Golden Seal Tonic	19.6
Mensman's Peptonized Beef Tonic	16.5
Parker's Tonic, "purely vegetable"	41.6
Schenck's Seaweed Tonic, "entirely harmless"	19.5
Baxter's Mandrake Bitters	16.5

	Per cent. of alcohol (by volume).
Baker's Stomach Bitters	42.6
Burdock Blood Bitters	25.2
Greene's Nervura	17.2
Hartshorn's Bitters	22.2
Hoofland's German Bitters, "entirely vegetable"	25.6
Hop Bitters	12.
Hostetter's Stomach Bitters	44.3
Kaufman's Sulphur Bitters, "contains no alcohol" (as a matter of fact it contains 20.5 per cent. of alcohol and no sulphur)	20.5
Puritana	22.
Richardson's Concentrated Sherry Wine Bitters	47.5
Warner's Safe Tonic Bitters	35.7
Warren's Bilios Bitters	21.5
Faith Whitcomb's Nerve Bitters	20.3

The Food Commissioner of North Dakota in his annual report for 1905 says: "North Dakota being a prohibition State, many products have been prepared and offered for sale under the guise of being proprietary medicinal preparations, good for nearly all ills to which man is heir, but which in reality have a good amount of alcohol as the main ingredient. In certain localities these remedies seem to have become very popular and are prominently displayed in drug store windows, and their use is said to be largely on the increase.

"Below we give a few of those recently examined and a statement of the amount of alcohol contained in each."

	Per Cent.
Leithhead's Peruvian Tonic	24.95
Leithhead's Stomach Bitters	41.80
Old Kentucky Bitters	30.31
IXL Bitters	27.40
Richerd's La Grippe Specific	24.02

A QUIET LULLABY.

" Beat upon mine, little heart! beat, beat!
Beat upon mine! you are mine, my sweet!
All mine from your pretty blue eyes to your feet,
My sweet!"

CHAPTER XXXIV.

THE DISORDERS OF MENSTRUATION.

Absence of menstruation: Causes; Symptoms; Treatment. Sudden checking of the monthly bleeding. Scanty menstrual flow. Vicarious menstruation. Profuse menstrual discharge or flooding. Painful menstruation.

"They talk of short-lived pleasures—be it so—
Pain dies as quickly; stern, hard-featured pain
Expires, and lets her weary prisoner go;
The fiercest agonies have shortest reign."
—*Bryant.*

UNDER normal conditions a woman should menstruate regularly every twenty-eight days without experiencing pain or any other disturbance. Yet, under the impression that suffering is the natural lot of her sex, a woman often will every month undergo the most excruciating agony without making the slightest effort to obtain relief. On the other hand, this same person is apt to become greatly exercised if the flow should be delayed or missed, although such an occurrence may be the result of merely a change in her surroundings.

ABSENCE OF MENSTRUATION.

Menstruation may be absent in the sense that it has never appeared and it may be suppressed.

Causes.—The absence or the suppression of menstruation may be due to a number of conditions in the woman

herself and in her environment. Most all the cases in which the monthly sickness has been absent for a longer or shorter period are caused by physical or mental overwork and insufficiency of food. Absent or suppressed menstruation is quite commonly seen in studious school-girls who devote too much time to their books and not enough to exercise in the open air; it is not rare in shop girls who starve themselves, that they may be able to appear in better clothes than their small salaries would ordinarily allow.

When a defect of development exists in the organs of generation, menstruation may never occur. This, however, is an exceedingly rare condition. When after labor, as sometimes though rarely occurs, the womb contracts to a size much below the normal, the menstrual flow may fail to reappear.

The monthly sickness may be suppressed should disease or injury be present in any of the female organs.

In the acute general diseases, such as typhoid fever, menstruation is often absent and may return only with the full restoration of the general health after convalescence. The menses are also frequently suppressed in chronic general diseases, especially those associated with debility, such as chlorosis, anemia, malaria and consumption. An excessive development of fat may prevent the flow appearing even in persons whose general health appears to be excellent. Absence of the menstrual function is a frequent accompaniment of mental disturbance, occurring quite commonly in insanity and being often produced by fright, grief or anxiety. The same condition results from changes of climate and is experienced by immigrants for some time after their arrival. It may also be brought about by change of surroundings, as when a woman moves from the country to a large city, and it may continue until she has become accustomed to her new environment.

Rare cases have been known of women who were apparently in perfect general health and whose sexual organs seemed to be well developed but who never had menstruated.

SYMPTOMS EXPERIENCED WHEN MENSTRUATION IS ABSENT.

Menstruation may be absent without causing the slightest inconvenience. On the other hand, there may be present at the menstrual period a feeling of general disturbance with headache, flashes of heat, nervousness, nausea and vomiting, and fullness and pain in the pelvis. In some cases various eruptions on the skin have been noticed.

The most common symptom associated with this condition is poor health, both mental and physical. This, as has been shown, although frequently regarded as the result of the suppression, is usually really the cause of it.

Treatment.—Almost every case will require treatment directed to the improvement of the general bodily health. The girl or woman must live in strict accordance with the hygienic rules laid down in this book. She should exercise in the open air as directed in chapter VII; in fact, as much of her time as possible should be spent in the fresh air and in the sunshine. This is especially necessary in the case of overworked school-girls, who must be made to apply themselves less closely to their studies. Every morning the cold hygienic bath described in chapter II should be taken. Sea-bathing and a change of climate and surroundings are also beneficial. There are a number of medicinal remedies which the physician may prescribe.

SUDDEN CHECKING OF THE MENSTRUAL FLOW.

During the menstrual flow the bleeding may be suddenly suppressed. Such an occurrence may follow an exposure to cold or an unexpected emotional disturbance. It

may or may not be associated with pain, but is liable to cause the patient trouble.

When the menses are suddenly checked the girl should be given a hot foot bath and be put to bed, with moist heat applied to the lower abdomen. At the following menstrual period the strictest hygienic precautions should be observed as detailed in chapter X.

The special treatment in each case will depend altogether upon the cause. Whenever the menses are absent or suppressed it is always advisable to consult the family physician, who may recommend that an examination be made by a gynecologist.

SCANTY MENSTRUAL FLOW.

When the menstrual flow is much less than normal, one of the conditions may be present which have been mentioned as giving rise to absent or suppressed menstruation. When this is the case the treatment is the same as that described on the preceding pages.

It must be borne in mind, however, that certain women may have individual peculiarities in this respect without departing from the limits of health.

PROFUSE MENSTRUAL DISCHARGE OR FLOODING.

The presence of flooding or of excessive menstrual bleeding is a much more significant condition than absence or suppression of menstruation, and it usually indicates a more serious state of affairs. Many diseases of the female generative organs have as a prominent symptom an increase in the duration and amount of the menstrual flow. An enumeration of these many and varied diseases would serve no useful purpose. Moreover, it might tend to alarm unnecessarily any woman who imagined that her periods were unduly prolonged.

If the bleeding is really excessive, there are two things a woman can do—one dangerous, the other safe. If a woman wants to tinker with her life and her health she can take any one of the many worthless patent medicines that the misleading advertisements guarantee to cure conditions which she imagines are exactly like hers. If she takes these alcoholic beverages* long enough she may delay applying for proper relief until the condition is past all cure.

The only safe thing for a woman to do when she notices excessive bleeding is to immediately consult a reliable physician. Doctors who advertise—the so-called quacks—are almost as dangerous as the advertised medicines.

VICARIOUS MENSTRUATION.

The condition in which the discharge of blood at the time of the menstrual period occurs from some part of the body other than the uterus has already been discussed in chapter X.

The treatment of vicarious menstruation should be entirely hygienic, directed to the improvement of the general health. A physician should be consulted to find out if any physical defect or local disease is present.

A woman must never take it upon herself to decide that a hemorrhage or bleeding is due to vicarious menstruation.

PAINFUL MENSTRUATION.

Menstruation normally is not accompanied by pain. When pain is present it is usually due to a condition which can be removed. Consequently it is seldom necessary for a woman to suffer at the time of her periods.

Pain occurs at the time of the menstrual period in the conditions called anemia and chlorosis, which are associated

* See chapter XXXIII.

with impoverished blood. It is often due to an obstruction to the flow of blood produced by a bending forward of the uterus or of its neck. The pains then are characteristic; they begin in the center of the lower abdomen and are of a violent character, extending down the thighs and in later years to the whole of the pelvis and the back. They occur for several hours before the flow begins, being probably caused by strong contractions of the uterus in an endeavor to drive the accumulated blood past the bend that prevents its escape. As soon as the blood begins to flow freely the pain is relieved and may not reoccur until the next period. While the pain is at its height the woman may experience nausea and vomiting.

When painful menstruation is due to a bend in the womb it is seldom outgrown. On the contrary, if not relieved, the suffering tends rather to increase. The proper methods of treatment in this condition will be prescribed in each case by the attending physician.

When the pain experienced at the monthly period is due to an impoverished condition of the blood or to a lowering of the general health, the hygienic treatment already described is indicated.

CHAPTER XXXV.

MISCARRIAGE AND ITS PREVENTION

The Course of a Miscarriage. The Causes of a Miscarriage. The Signs of a Miscarriage: Pain, hemorrhage, the expulsion of the ovum. The Danger of an Abortion or Miscarriage. The Prevention of a Miscarriage; How to avert it when threatened. Treatment of an Inevitable Miscarriage; Its after treatment.

"Who would not give a trifle to prevent
What he would give a thousand worlds to cure?"

—*Young.*

THE fetus is sometimes expelled before it has reached its full development. Such an accident may occur at any time during the course of pregnancy.

THE COURSE OF A MISCARRIAGE.

The course of an abortion or miscarriage is much the same as that of a labor at term. The contraction of the uterus in its efforts to expel its contents causes a gradual dilatation of the os or mouth of the cervix, which is followed by the expulsion of the embryo and its membranes, together with the placenta or afterbirth. After this, the womb contracts still further until it has again reached its normal size.

THE CAUSES OF A MISCARRIAGE.

There are many conditions which may produce a miscarriage. When the fetus is diseased it may be expelled prematurely. The presence of syphilis in either of the parents may lead to a similar termination of pregnancy. The woman is,

moreover, susceptible to a number of influences which may cause a miscarriage; a blow or a fall may produce it. Sometimes the uterus is extremely irritable, so much so that it is excited to contraction by the most trivial occurrence, such as washing at the tub, sweeping, dancing, taking a long walk, a horseback ride or a surf bath, making a misstep, being jolted by a carriage, being subjected to a fright or shock, and so forth. Anything that shakes or agitates the womb may have a similar effect. Consequently when the woman suffers from St. Vitus' dance, uncontrollable vomiting or coughing, or from convulsions due to kidney trouble or epilepsy, hysteria or other nervous affections, her pregnancy is liable to be interrupted. She may also lose the child when she is attacked with severe general disease such as pneumonia. Inability of the uterus to expand on account of a backward displacement, or an overdistention with twins, or with an excess of the waters or *liquor amnii* usually produces a miscarriage.

THE SIGNS OF A MISCARRIAGE.

A condition that is always present when a miscarriage is threatened or has actually occurred is **hemorrhage.** The bleeding may be slight or excessive. The blood usually does not flow in a steady stream, but is expelled from time to time in the form of clots. Yet, as there are other conditions which might cause a hemorrhage, this symptom alone cannot be regarded as diagnostic.

Pain is an almost constant symptom, its intensity being greater the further the pregnancy is advanced. It may, however, be absent, especially in early miscarriages.

The one sign by which the occurrence of a miscarriage can be verified or, to use a medical term, diagnosed is the **expulsion of** all or part of **the ovum.** The appearance of the substance expelled varies, depending upon whether or not the

embryo is surrounded by its various coverings. When enveloped in the membranes it may appear as a ball of flesh, which, on being opened, is found to contain the embryo. On the other hand, it may be cast off as a sack with thin transparent walls, through which the embryo may be seen lying in the waters. Sometimes the whole ovum is so minute that it escapes among the clots of blood without being noticed. When the portions of membranes, which resemble pieces of flesh, are floated in water they are seen to be studded over with little projections which give to them somewhat the appearance of a chestnut burr.

When the whole embryo is expelled with all its membranes the miscarriage is said to be complete. An incomplete abortion or miscarriage, on the other hand, occurs when a portion of the embryo or its membranes remains behind within the uterus.

THE DANGER OF AN ABORTION OR MISCARRIAGE.

Every abortion or miscarriage is attended with a certain amount of danger. When the ovum is not expelled in its entirety, parts of the membranes remaining behind in the womb may putrefy, thus poisoning the whole system, or else by their presence prevent firm contraction of the womb, thus causing a persistent hemorrhage. The mortality of miscarriage is almost as high as that of child-birth. Most fatal of all are the criminal and self-adduced abortions. In these cases there is also the danger of blood poisoning or infection from the use of hands or instruments which are not surgically clean. The added risk of injury from the unskillful use of instruments is also very great.

THE PREVENTION OF A MISCARRIAGE.

When it is known that, owing to an irritable uterus, a woman has a tendency to abort, every precaution should be

taken to guard her from any influence that might stimulate the contraction of the uterus. At the times corresponding to her menstrual periods all efforts in this direction must be redoubled. The woman should be protected from nervous shocks, undue physical exertion, errors in diet and marital intercourse. In the most severe cases rest in bed may be necessary, sometimes for the whole or greater part of pregnancy, certainly during those days upon which the menstrual period usually falls.

When the cause of the habitual miscarriage is known, treatment should be directed to its removal. A displaced uterus must be restored to its proper position and kept there. A general disease such as syphilis always requires treatment. Coughing, vomiting and convulsions should receive appropriate management. In each case the physician in charge will decide what is to be done.

To Avert a Threatened Miscarriage.—When, during the course of a normal pregnancy, bleeding from the vagina is observed, a miscarriage is threatened. The woman in whom this occurs may be perfectly healthy and of sound constitution; her generative organs may be normal; and she may never previously have aborted. Some extra exertion or some slight violence, however, may have partially separated the developing fetus from the wall of the womb. If no suspicious fleshlike pieces have been passed there is often a chance of averting this accident.

The woman must at once be put to bed on her back in a darkened room where everything is kept quiet. The external genital region must be cleansed thoroughly with soap and water and then bathed with a 1 to 1000 bichlorid of mercury solution. A sterile gauze dressing should next be applied and held in place by a T-bandage, which consists of two strips of muslin about four to six inches wide, fastened together to form

a T. The top or bar of the T is tied about the waist and the stem or tail of the T is brought down in the back and carried over the gauze dressing to the front, whence it is brought up again, the end being fastened to the part that goes around the waist. The physician, who should be immediately summoned, will probably give medicines that will diminish the nervous sensibility and render the uterine muscles less irritable.

It cannot be emphasized too strongly that in every case where bleeding from the womb occurs during pregnancy the physician must be sent for at once and that everything passed must be saved for his inspection.

TREATMENT OF AN INEVITABLE MISCARRIAGE.

When a miscarriage cannot be prevented, it is treated in much the same manner as a labor at term. A physician should always be called in. Strict asepsis must be observed as described in Chapter XXI. Everything that comes in contact with the woman—hands, instruments and dressings—must be surgically clean. All clots and all dressings must be saved for examination by the physician; in this way he will be able to tell whether or not the whole embryo with all its coverings has been passed—a most important point. The precise line of treatment to be followed in each case will always be directed by the physician in charge.

The After Treatment of a Miscarriage.—A great deal of unnecessary sickness and chronic invalidism is due to the fact that women do not thoroughly appreciate the necessity of recovering completely from a miscarriage before taking up their daily work. Too often do they regard a miscarriage as a matter of little moment and insist on being up and about in a few days after this accident. It is often with the greatest difficulty that a physician can persuade his patient to remain in bed for even ten days or two weeks.

The after treatment of a miscarriage is as important as that of a delivery at full term. The author does not wish to unnecessarily alarm a woman who may have met with a miscarriage by enumerating the many sources of danger connected with neglect of this condition. He therefore will merely state that if a woman desires to undergo a complete recovery after having a miscarriage, she must obey implicitly all the instructions of her physician. If she follows his advice faithfully she will probably never in the future experience any ill effects of her mishap.

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YOUNG WOMANHOOD'S CHARMS.

Regularity of feature, sweetness of expression, shapely arms and hands, symmetry of form with a wealth of hair give a winsomeness to womanhood which should be cultivated and preserved.

CHAPTER XXXVI.

STERILITY: ITS CAUSES, PREVENTION AND CURE.

The woman not always to blame. Causes of Sterility in Women: Abnormalities, displacements, lacerations, inflammation; General conditions, such as obesity, anemia, etc.; Alcoholism; Absence of affinity; Lack of moderation. Prevention of Sterility. The Cure of Sterility.

"Call not that man wretched who, whatever ills he suffers, has a child to love."—*Southey.*

BY sterility is meant the inability to produce offspring. It is believed that about one out of every eight or ten marriages is barren. The fault, however, does not always lie with the woman; in every six childless marriages about one is due to sterility in the husband. Consequently in every case of barrenness, before the wife is subjected to examination or treatment, the husband should first consult a physician.

CAUSES OF STERILITY IN WOMEN.

Sterility in the female may be due to one of many causes. It may result from some abnormality or malformation of the internal or external generative organs, a condition that may have existed since birth. The presence of a tumor may prevent conception. A displacement or bending of the womb may have a similar effect. Lacerations or tears that have occurred during labor and have not been repaired likewise may inter-

fere with the child-bearing function. One of the commonest causes of sterility is inflammation of the womb, especially when this has become chronic. Disease of the ovaries also frequently produces such a condition. Disease of the Fallopian tubes, however, is the most common cause. As the ovum must pass through the tube in order to reach the womb, anything that tends to prevent its passage by blocking or constricting the tube will prevent its fertilization. The tubes become blocked and constricted as the result of inflammatory processes, both acute and chronic. Acute inflammation of the Fallopian tubes is usually due to septic infection, occurring at childbirth or during a miscarriage. Chronic inflammation, a much more common condition, has its origin usually in gonorrhea, and occurs not rarely in young married women who have been infected by their husbands. Sterility also sometimes results when the vaginal discharge or leucorrhea that accompanies inflammation of the uterus or of the vagina is of such a character as to destroy the spermatozoa or male cells.

There are several general conditions that may be responsible for sterility. The one of these of most frequent occurrence is great obesity. Very fat women are usually barren. Some authors seem to think that the body cannot both produce fat and produce offspring. It is well known that at the age when child-bearing ceases women often become stout, and that women who soon after marriage rapidly accumulate fat rarely have more than one or two children. A woman who suffers from anemia may be sterile in consequence. Diseases such as diabetes, cancer, consumption and Bright's disease may also be associated with barrenness.

The habitual use of alcohol is apt to prevent the occurrence of conception. Women addicted to self-abuse also seldom bear children. Authorities have come to the conclusion that in some cases sterility is due to a lack of affinity, so to speak, between husband and wife. Lack of moderation in the marital relations is also a well-recognized cause of sterility.

In each case the physician in charge must decide what is the cause of the sterility.

PREVENTION OF STERILITY.

Knowing the causes that produce sterility, one can often prevent such an occurrence by avoiding them. Any diseased condition should be attended to at once. Lacerations should be repaired as soon as possible after they occur. A displaced organ should be put back in position. Proper care during and after a labor or miscarriage will do much toward preventing barrenness. In addition to the moral aspect, the fact that a woman who has an abortion performed on her usually becomes sterile should act as a deterring factor to those who regard with complacency this destruction of a human life. If women would insist on marrying only those men whose lives have been pure, many more marriages would be fertile than are so at the present day.

THE CURE OF STERILITY.

Before the proper remedy can be applied, the cause of the unproductiveness in the individual case must be recognized. In every instance the investigation should include both the husband and the wife. Consequently, before a woman is subjected to an examination, the husband should consult a reliable physician, who will determine whether or not the fault lies with him. If this investigation should prove negative, the wife must put herself in the hands of a competent physician. Neither man nor woman should ever have anything to do with physicians who advertise—the so-called "quacks."

Some cases of barrenness can be cured, others cannot. Those due to errors in development and to malformations are rarely, if ever, amenable to treatment. When sterility is caused by abnormal conditions resulting from chronic inflammation of one or more of the organs of generation, or to a malposition, or to a laceration, the surgeon or gynecologist may

be able to effect a cure. With the reposition of the displaced organs, with the repair of the lacerated structures, or with the removal of the inflamed tissues, conception may occur. If a leucorrheal discharge be treated as described in Chapter XXXIII it may cease to be a factor in producing barrenness.

Sterility, due to the presence of a general disease, may disappear with the cure of the disease. When it is due to unhealthy modes of life the woman herself may do much toward relieving the condition. She should lead a healthy life according to the rules laid down in the earlier chapters of this book. Often a change of air and scenery is of great benefit. Women who are very fat should take sufficient exercise and live on an appropriate diet, both of which will be prescribed by their physicians in accordance with the individual requirements of their cases. The cure is not far to seek in women addicted to the use of alcohol. Matthews Duncan has described the case of an intemperate woman who was sterile for many years, but who became pregnant on abstaining from drink. Moderation should be observed in the marital relations and all bad habits must be avoided.

The observance of the above precautions may be rewarded by the blessing of offspring in a hitherto childless marriage.

CHAPTER XXXVII.

THE CAUSES OF DISEASES PECULIAR TO WOMEN.

Neglect of Hygienic Rules: Lack of proper exercise; Improprieties of dress; Improper food; Want of sufficient rest. The Development of the Mind at the Expense of the Body: Evils in the modern system of education; The girl's health given little consideration. Imprudence During Menstruation. Mismanagement During and After Child-birth. Artificial Termination of Pregnancy. Unhygienic Marital Relations. Chronic Constipation. The majority of the conditions causing women's diseases are preventable. able.

"Find out the cause of this effect,
Or rather say, the cause of this defect,
For this effect defective comes by cause."

—*Shakespeare.*

THERE is no question that many of the diseases from which women suffer occur through ignorance. Never having been informed as to the precautions she should observe in her daily life, a woman frequently falls into errors which in time lead to serious trouble. Knowledge, therefore, is the greatest aid to prevention. Familiarity with the causes of the diseases to which she is subject would certainly render a woman better able to avoid them. These causes may be summed up as: (1) Neglect of hygienic rules; (2) excessive mental development at the expense of physical development; (3) imprudence during menstruation; (4) imprudence and neglect during and after childbirth; (5) the artificial termina-

tion of pregnancy; (6) unhygienic marital relations; and (7) chronic constipation.

NEGLECT OF HYGIENIC RULES.

Failure to live hygienically is certainly a preventable cause.

Lack of Proper Exercise.—The majority of the female sex fail to realize how essential to health is daily exercise in the open air, and they neglect this important means of keeping the muscles and internal organs in a normal condition. In the cities many of the girls and younger women indulge in various sports, such as golf, tennis, bowling, rowing, and so forth, but others, especially the older women, remain indoors, confining themselves to the close atmosphere of the house. There are some who even do almost no walking at all and who seldom engage in any work involving the least exertion. In the country districts women commonly take even less exercise than they do in the city; the farmer's wife and daughter spend most of their time in stuffy and overheated rooms. Those who neglect to take sufficient exercise often suffer in consequence from obesity, loss of appetite, indigestion, chronic constipation, ill-defined pains and menstrual irregularities.

On the other hand, if the exercise be excessive, or be indulged in at the wrong time, it may itself lead to conditions of ill health. During the menstrual period a woman should avoid all exercise and consequently should not indulge in violent games, in dancing or in surf bathing. Violent exertion of any kind is always dangerous to a pregnant woman.

Improprieties of Dress.—Faulty methods of dressing are responsible for many diseased conditions. The body frequently is insufficiently protected from cold. Undergarments are often made of unsuitable material and so fashioned that they leave the neck, chest, arms or lower limbs unprotected. Open work stockings and thin slippers are frequently worn. The dress is often cut low, so that the neck and shoulders are left bare. When a person thus insufficiently clad is exposed to cold, or to

a sudden change of temperature, as in leaving a heated ball-room for the cool air of a hall or veranda or in stepping into the yard from a hot kitchen, the skin becomes chilled and the person "catches cold;" in other words, the blood-vessels in the skin contract, driving the blood into the internal organs, and thereby causing them to become congested. The effects of such exposure are much more serious when it occurs during menstruation, as at this time the organs already contain an excessive amount of blood.

The *constriction* of the modern female dress, as typified by the corset, does harm in many ways; it interferes with the proper functions of the organs in the chest, abdomen and pelvis. The restriction it causes to the proper expansion of the lungs may in time lead to consumption. The heart is frequently slightly displaced, and in consequence often becomes very irritable, producing symptoms at the slightest additional stimulus.

Tight lacing and the suspending of heavy clothing from the waist affect the breathing in still another way by impairing the abdominal respiration. Moreover, the abdominal walls are weakened and the abdominal organs are pressed down by this injurious force. The stomach becomes altered in size and its digestive powers are interfered with. It, as well as other of the abdominal organs, may be dragged out of place. The effect of these changes will be a chronic dyspepsia involving both the stomach and the intestines and associated with chronic constipation and distention of the bowels. The wearing of tight corsets has even led in some cases to the occurrence of appendicitis.

Compression exerts no less serious an effect on the pelvic organs. It may cause the womb to be displaced backward and downward, and, through interference with its circulation, to become chronically congested and later become the seat of other and more serious disorders. The ovaries and Fallopian tubes are likewise crowded out of their normal position by tight

lacing. During pregnancy, constriction of the abdomen may produce a miscarriage or may affect the shape and position of the child; it always renders the occurrence of varicose veins more liable during this period, as does also the wearing of circular garters.

Improper Food.—Improper food has its share in causing disease. In the first place, the maintenance of the general health is necessary for making one able to combat disease. To keep the body strong and well, good, nourishing food is required. Indeed, many painful conditions of the generative organs are due to an impoverished state of the blood caused by malnutrition. It is important, therefore, for every woman to eat a sufficient amount of good food properly prepared. It has been said that the American woman in the rural districts is half starved, not because she does not get enough to eat, but because she does not eat the kind of food that makes rich blood and tends to build up the tissues of the body. The farmer's wife, for instance, instead of being stout and of good color, is often pale and thin. This is in part due to the too frequent use of the frying pan, to the eating of salt fish and meats instead of fresh foods, to the drinking of coffee and tea instead of milk and cocoa, and above all to the constant use of pies and hot bread. In the large cities, on the other hand, women eat too much, and in consequence develop dyspepsia, constipation, and allied disorders. It is here that the late eating and drinking among the fashionable people is productive of so much chronic trouble.

Want of Sufficient Rest.—Many nervous disorders occur from women not taking sufficient rest. Many young girls go out night after night during a whole winter's gay season, coming home from a dance often at four or five o'clock in the morning. With the using up of the nervous energy which she needs for resisting disease, a society woman frequently becomes the prey of various disorders.

Nor is the society woman the only offender. Many work-

A FAMOUS BEAUTY BY A FAMOUS PAINTER.

It is the duty of woman to add to beauty, given by nature, the expression and sweetness which comes by cultivation.

ing girls, after standing before a loom or behind a counter from early morning till sundown, will go out again after supper and will not return until late at night. The mother of a large family after a hard day's work will often sit up until midnight, sewing. It is no wonder, therefore, that with this waste of her vital force, a woman loses her inborn ability to combat disease and soon succumbs to one of the many diseases peculiar to her sex.

THE DEVELOPMENT OF THE MIND AT THE EXPENSE OF THE BODY.

Every physician sees the injurious effect upon the girl's health of the modern system of education. Mothers whose eyes are open should also see it; yet the melancholy fact remains that few do. Even female school teachers seldom recognize or admit that such a state of affairs exists. The difficulty seems to the writer to lie in the attempt to teach too much in too short a time. With the continual advance of knowledge there naturally is more to be learned in each succeeding decade. This fact has been met differently by the college and by the school. In the medical college, for instance, when the increase of science necessitated the addition of extra subjects, the course was extended from two to three, and then to four years. To-day, in fact, some universities will admit to the medical course only those who have completed four years in the academic college department, thus making the whole course of study after leaving the high school seven or eight years. In the schools, however, the length of the course remains the same, despite the constant additions to the number of subjects taught and to the amount to be learned in each branch. This has resulted in a course of education of too great severity, which demands of growing girls too close an application to their studies. The girl must spend the whole morning and part of the afternoon in a crowded and often badly ventilated class-room, frequently

with her body in a cramped position. During the rest of the day she must remain indoors at her books, preparing the lessons for the morrow.

With all this attention to the mental advancement of the girl, little or no provision is made for her physical development. Throughout this whole system of education the health of the girl is given little consideration. There is no attempt to regulate the amount or character of the work in accordance with the health, condition, or temperament of the individual. The question of sex is utterly disregarded. The girl receives no special care or attention at the time of puberty, or at the menstrual periods, nor are her studies lightened at these times. Instead, Nature's demand for physical and mental rest is met with the teacher's urging on the unfortunate child and endeavoring to make her apply herself more closely to her lessons. It is no wonder, therefore, that with the girl's rapid mental development comes a condition of general ill-health with impoverished blood, poor physique, and a marked tendency to disorders and disease of the generative organs. Prominent among such disorders are pain and irregularity attending the menstrual function. Professor Goodsell thus expressed his views on this important subject:

"In one word, it is to the present cramming and high-pressure system of education, together with its environment, that I attribute much of the menstrual derangements, the sterility, the infecundity of our women, the absence of sexual feeling, the aversion to maternity, the too often lingering convalescence from a first labor, which is frequently the only one, and the very common inability to suckle their offspring. From this cause come most of my unmarried patients with nerve prostration, with their protean mimicry of uterine symptoms — unmarried often because they are not well enough to wed. If woman is to be thus stunted and deformed to meet the ambitious intellectual demands of the day, if her health must be

sacrificed upon the altar of her education, the time may come when, to renew the worn-out stock of this Republic, it will be needful for our young men to make matrimonial incursions into lands where educational theories are unknown."

IMPRUDENCE DURING MENSTRUATION.

There are preventable causes other than those mentioned. A considerable proportion of women's sufferings is caused by carelessness, imprudence and neglect during the menstrual period. As has been shown, the womb and ovaries become greatly congested for several days in every month, during which time the nervous system is in a state of unusual excitability. Instead of keeping the congested organs at rest, protecting the body from cold and relieving all strain from the mind and nervous system, women will often exhibit an utter disregard for all hygienic precautions. They will go out in the most inclement weather, often insufficiently clad and wearing thin slippers. Seldom during this period is any difference observed in the daily routine, whether of business, housework, school or society. Girls indulge in skating, dancing, and long walks during such a time without giving the matter a second thought. Some women even go so far as to try to check the flow by taking a cold general bath or a cold vaginal douche when their condition interferes with their plans for work or pleasure—a most dangerous procedure. In fact, many diseases, both acute and chronic, are caused by the neglect through ignorance, recklessness, or necessity of proper precautions at the time of the menstrual periods.

MISMANAGEMENT DURING AND AFTER CHILD-BIRTH.

The chronic invalidism common among married women results in most cases from bad management, imprudence, carelessness or neglect either at the time of labor or during the

weeks immediately following it. Most frequently it is due to lacerations received during the passage of the child and which have never been repaired, and in some instances not even recognized. This mismanagement is more apt to occur when a midwife has been employed instead of a physician. Midwives, as a rule, are unable to recognize any but the most conspicuous injuries, and in many instances they are utterly incompetent to prevent lacerations. When a laceration is not repaired it may lead to many of the conditions from which women suffer. Another cause of disease having its origin at this time is the absence of surgical cleanliness on the part of the nurse in connection with everything that pertains to her patient.

Imprudence during the puerperium is also a frequent cause of women's diseases. After a labor at term the womb is six weeks in returning to the normal. In order that this process may proceed uninterruptedly to a perfect conclusion, rest is essential. One of the ill effects, therefore, of a woman's getting up too soon after child-birth and resuming her household duties is the failure of the womb to diminish in size and to become restored to its original condition; instead, it remains enlarged and congested, frequently undergoing a chronic inflammation. At this same time the membrane lining the uterus is rendered more liable to disease and becomes very easily affected. Then also, when a woman rises too soon after confinement, the large and heavy womb is liable to be displaced, especially as the ligaments supporting it have been weakened and stretched. If the abdominal compress is misapplied after labor—placed over the womb instead of above it—it will press this organ backward and thus cause a backward displacement.

ARTIFICIAL TERMINATION OF PREGNANCY.

Seldom is pregnancy terminated by artificial means without a long train of diseases following. Frequently the criminal operation ends in death. Chronic invalidism always results.

Moreover, in such cases, to the risks of an ordinary miscarriage is always added the danger of blood poisoning.

UNHYGIENIC MARITAL RELATIONS.

A woman's general health suffers and her generative organs become diseased when the normal relations are disturbed. Excess not only exhausts the nervous system and leads to a condition known as neurasthenia, but it also causes chronic congestion of the organs, with resultant abnormalities and disease. The various methods adopted to prevent conception are all injurious; their traces can be seen in the nervous breakdowns and local diseases that inevitably follow their use.

CHRONIC CONSTIPATION.

It is a well-known fact that the great majority of women are habitually constipated. Some may not have a passage of the bowels for weeks at a time. The large, hard, fecal masses present in the rectum act mechanically by pressing on the veins coming from the generative organs; this interference with the circulation causes congestion and the diseases usually following it. At the same time the poisons in the fecal discharges, that should be expelled from the intestines, are being slowly absorbed back into the blood, and thus give rise to many and varied symptoms and often prevent proper general development.

THE MAJORITY OF THE CAUSES OF WOMEN'S DISEASES ARE PREVENTABLE.

This enumeration of the causes that give rise to the diseases from which women suffer brings out the important fact that the majority of them are preventable. It shows how false is the idea so prevalent with the female sex that they have an inherent tendency to disease of the generative organs, and may be considered lucky if they escape. The statement may safely be made that the number of diseases that are unavoidable is

small compared with that large number of diseases for which the woman is herself directly responsible. Carelessness and indiscretion, the result usually of ignorance, cause the greater amount of women's suffering. It is to be hoped that, with a knowledge of the causes of the diseases peculiar to her sex, a woman will be better able to avoid them.

CHAPTER XXXVIII.

THE PREVENTION OF THE DISEASES PECULIAR TO WOMEN.

The prevention of disease lies in the woman's hands; When disease has occurred a physician must always be consulted. The Importance of Keeping the General Health at its Highest Point. Attention must be paid to the manner of supporting the clothes and to the mode of life generally, especially during the period of puberty. Many diseases are prevented by the Observance of Surgical Cleanliness During a Labor or Miscarriage and by the exercise of prudence and care afterward. The Prompt Repair of all Lacerations occurring during child-birth would be the greatest factor in banishing invalidism from womankind. The Question of Personal Purity and of marrying only one of good moral character.

"A wise physician, skill'd our wounds to heal,
Is more than armies to the public weal."

—*Pope.*

IT is in preventing disease that a woman can utilize what knowledge of hygiene she may possess. When once the disease has occurred, the advice of a competent physician must be sought. On the first evidence of anything being wrong a woman should always consult a reliable physician.. No one but a trained physician has the ability to recognize what condition is present, and none other can advise the appropriate treatment. An enumeration of the symptoms that arise from disease of the womb or Fallopian tubes or other organs would serve merely to make a woman introspective and apprehensive, without rendering her capable of properly interpreting any symptoms she might notice in

herself. How, in the absence of medical advice, the various symptoms that may occur can be temporarily relieved, has already been told in Chapter XXXIII. Whether or not she put those suggestions into practice, a woman should always place herself under the care of her physician. Even when the application of the home remedy has temporarily caused the symptoms to disappear, the diseased condition that produced them may still remain and may continue to grow progressively worse. When a woman puts herself under a doctor's care she must faithfully follow his directions. The physician in attendance is familiar with the actual conditions present, and he knows best what should be done. Any suggestions as to treatment that might appear in a book such as this would be superfluous to a woman who is under competent medical supervision. On the other hand, the sufferer who has put off seeking professional advice might be led to still further postpone this necessary action, should she read of any methods of treatment. Many women die before their time because, instead of going at once to their family practitioner, they try a certain patent medicine or adopt some gratuitous suggestion of a well-meaning but ignorant neighbor, until finally the disease has acquired such a hold that a cure is no longer possible.

PREVENTION BETTER THAN CURE.

Many diseases of women, as has been said, are preventable. Consequently, in connection with the description given in Chapter XXXVII as to the causes of the more important diseases, instruction as to how these diseases can be prevented may prove of value. According to an old adage, "An ounce of prevention is worth a pound of cure." Not only, however, is it much easier to prevent a disease than to cure it, but the reward of prevention is the avoidance of suffering, while cure merely puts an end to it. So, with prevention, the gain is greater although the expenditure is less; yet, despite this fact,

having to act with caution always seems a hardship to a well person. It is a trouble to be careful; and inasmuch as a woman may possibly escape sickness despite her imprudence, she often is willing to run the risk. Than this there can be nothing more foolish. To live hygienically is not so much more difficult or inconvenient than to live unhygienically, if one but knows how to go about it. Yet through ignorance a woman may, by her imprudence, actually invite disease.

Some grave conditions may often be prevented by prompt attention to their earliest symptoms. At the first evidence of disease a woman should immediately be placed under medical care. When the cause of a disease is known, avoidance or removal of the cause will often prevent the disease. Hence a thorough knowledge of the causes of women's diseases, as given in Chapter XXXVII, is needed for intelligently applying the methods of prevention.

THE NECESSITY OF PRESERVING THE GENERAL HEALTH.

There are some diseases, however—such, for instance, as cancer — whose cause is not yet known. In such cases the best preventive consists in the preservation of the general health and the development of a strong bodily constitution. It is the belief of the author that every one is endowed with the power of resisting disease, and that this power is strongest when the general health of the individual is at its best, and weakest when the general health is lowered. To his mind, the most effective method of preventing such a disease as cancer or tuberculosis is to keep the general health at the highest point by means of the hygienic measures described in Chapters II to VII of this book. The same is true of the various chronic conditions, which are more liable to obtain a hold on those whose general health is run down.

There are other conditions, including the various displacements of the womb, which may often be prevented by the observ-

ance of hygienic principles. If a girl is allowed to grow up strong and healthy, she probably will escape many distressing complaints. Although the bending forward of the womb, or anteflexion, as it is called, sometimes exists from birth and occasionally is the result of imperfect development during childhood, its occurrence is always favored by improper dress and improper modes of life during the period of puberty. This neglect of hygiene may even be the sole cause of the condition. A backward displacement of the uterus also is more liable to occur when the clothing is supported from the waist, and much less so when it is supported from the shoulders.

THE OBSERVANCE OF PRUDENCE AND CARE DURING AND AFTER A LABOR OR MISCARRIAGE.

There are many diseases of women which have their origin in a labor or miscarriage that was not properly managed or in which the woman was imprudent. The prevention of an acute inflammation of the womb, for instance, lies in the observance of surgical cleanliness by physician, nurse and patient both during and after a labor or miscarriage. If everything—hand, instrument or dressing—that touches the private parts is surgically clean, and if the directions given in Chapters XIX, XXII and XXV are strictly observed, such a complication will be prevented. This observance of surgical cleanliness during and after a labor or miscarriage will also prevent acute inflammation of the Fallopian tubes, which is a septic infection or poisoning usually due to an extension from an acutely inflamed womb. This condition consequently may occur after a criminal abortion, miscarriage or labor in which infection has occurred. It frequently leads to peritonitis or blood poisoning, which may go on to a fatal termination, or may require a dangerous operation in order to save the woman. This is why any one who submits to a criminal abortion runs the risk of losing her life.

Many cases of displacements of the uterus and of prolapse or falling of the womb would be prevented by the observance of prudence and care after a labor or miscarriage. Leaving the bed or going to work too soon after one of these occurrences is the most frequent cause of backward displacement of the womb. Faulty application of the compress under the binder after labor may also cause this condition if, instead of applying it above the top of the womb, the nurse places the compress directly in front of it, thus crowding the womb backward. Getting up too soon after confinement also causes prolapse or falling of the womb, due to the pulling of the womb—at this time large and heavy—on the overstretched ligaments, which are unable to stand the strain.

THE PROMPT REPAIR OF LACERATIONS.

The one thing that would do most toward banishing invalidism from womankind is the prompt repair of all lacerations occurring during childbirth. An unrepaired laceration or tear that has occurred during labor is another common cause of a backward displacement of the womb. A tear or laceration which has occurred during childbirth and has not been repaired is the most frequent cause of falling of the womb, although the prolapse is more liable to occur or to grow worse if the ligaments are weakened by too frequent labors, by old age or by a condition of general feebleness. Heavy lifting or hard manual labor may also help to produce or increase the prolapse in the presence of any of the above conditions. Certain incurable diseases are sometimes prevented by the prompt repair of a laceration occurring during childbirth. The cause of cancer, for instance, has never been discovered. Physicians have noticed, however, that it frequently begins at the site of an old tear of the neck of the womb which has never received

attention. One way of preventing cancer, therefore, is to have promptly repaired any laceration that may have occurred in the neck of the womb.

PERSONAL PURITY A FACTOR IN THE PREVENTION OF DISEASE.

Personal purity is the chief protection from pus tubes and other chronic or acute conditions having their origin in gonorrhea. Many innocent women, however, are made to suffer and even die for the faults of others. When a young man sows his wild oats, it is usually his future wife who must reap them. For her own protection, therefore, a girl should not marry one whose morals are lax in this respect.

GLOSSARY

GLOSSARY

The glossary contains simple definitions of all technical terms and of all other words that may not be easily understood.

Abdomen. (Noun.) Belly; the cavity of the body extending from the chest above to the pelvis below. (The word is sometimes used to designate the anterior wall of this belly cavity.)

Abdominal. (Adj.) Pertaining to, or belonging to, the abdomen; situated in or on the abdomen.

Abdominal Binder. (Noun.) A bandage applied around the abdomen.

Abnormal. (Adj.) Not conforming with the general rule of Nature.

Absorb. (Verb.) To suck up.

Absorbent. (Adj.) Capable of absorbing or sucking up.

Absorption. (Noun.) The act or process of absorbing.

Accentuated. (Verb.) Strongly marked.

Accoucheur. (Noun.) One who attends women in childbirth.

Adipose. (Adj.) Fatty; consisting of fat.

Adolescence. (Noun.) Youth; the period between puberty and full development or maturity. (The word is used in this book to designate the beginning of this period, about the age of fourteen in boys and of twelve in girls.)

Aerated. (Verb.) 1. Exposed to the action of fresh air.
2. Impregnated with carbon dioxid.

Alcoholic Drink. (Noun.) A beverage containing alcohol such as whisky, beer, etc.

Algæ. (Noun.) Plants growing in water, such as seaweeds.

Alkaline. (Adj.) Having properties the opposite to those of an acid.

Alkalinity. (Noun.) The quality or state of being alkaline.

Alternate. (Verb.) To do or cause to be done in turn; to pass from one thing to another and back again, and so on indefinitely; to interchange.

Alternate. (Adj.) Occurring by turns; every second.

Amenorrhea. (Noun.) Absence of the menstrual flow when it should normally be present.

Amniotic Fluid. (Noun.) The fluid that surrounds the embryo and fetus in the womb. (Same as liquor amnii.)

Analyze. (Verb.) To ascertain the composition of.

Anatomy. (Noun.) The study of the different tissues and organs of the body.

Anemia. (Noun.) A condition in which the iron in the blood is diminished.

Anesthetic. (Adj.) Pertaining to loss of sensation.

Anesthetic. (Noun.) A substance that produces temporary insensibility to feeling or pain.

Animal. (Adj.) Pertaining to animals.

Antennæ. (Noun.) The long " feelers " extending from the head of an insect.

Antiseptic. (Adj.) Having power to destroy bacteria or germs and prevent their growth.

Antiseptic. (Noun.) A chemical that destroys germs or prevents or restricts their growth.

Anus. (Noun.) The outer opening of the rectum.

Apparatus. (Noun.) A collection of instruments or of organs of the body all adapted for the accomplishment of a certain purpose.

Application. (Noun.) 1. The act of laying on.
2. The thing laid on.

Applicator. (Noun.) An instrument used in applying anything.

Areola. (Noun.) The colored circular area about the nipple of a woman's breast.

Asepsis. (Noun.) Absence of bacteria or germs.

Asphyxiated. (Verb.) Suffocated; deprived of air.

Atmosphere. (Noun.) The measure of atmospheric pressure. (It corresponds to the pressure of a vertical column of 30 inches of mercury and is taken as 15 pounds to the square inch.)

Atomizer. (Noun.) An apparatus for converting a liquid into a fine spray.

Attachment. (Noun.) That which binds or attaches one thing to another.

Bacteria. (Noun.) Germs; a low order of plant life. (They are very minute, and multiply with great rapidity; many forms of them cause disease.)

Basket-bed. (Noun.) (See Bassinet.)

Bassinet. (Noun.) A bed for a baby made out of a wicker basket, usually with a covering or hood over one end.

Bath-apron. (Noun.) An apron made of two Turkish towels fastened together at the top.

Batting. (Noun.) Cotton or wool arranged in sheets for quilting.

Bed-board. (Noun.) A board placed across a bed. (Used for holding dishes or writing material.)

Bed-cradle. (Noun.) A framework placed on the bed under the covers. (Employed to keep the bed-covers off the patient's body or limb.)

Bed-pan. (Noun.) A flat shallow vessel for receiving the intestinal discharges of a bedridden patient.

Bed-rest. (Noun.) An apparatus placed behind a patient to prop him up into a sitting position in bed.

Bedside-table. (Noun.) A table that extends over the bed when the stand is brought to the bedside.
Bicuspids. (Noun.) The fourth and fifth teeth from the middle.
Binder. (Noun.) A wide bandage worn about the abdomen.
Birth-canal. (Noun.) The organs or parts through which the infant passes during its birth. (It includes the uterus, cervix, vagina and vulva.)
Bladder. (Noun.) The organ that holds the urine after it leaves the kidneys and before it is voided externally.
Blood-poisoning. (Noun.) The presence in the blood of germs or bacteria that produce pus; the presence in the blood of the poisons of such bacteria.
Botany. (Noun.) The study of plants.
Bouillon. (Noun.) A broth made by boiling meat in water.
Breast. (Noun.) The organ or gland that in women secretes milk.
Breast-pump. (Noun.) An instrument for drawing milk from the breast.
Bright's Disease. (Noun.) Inflammation of the kidneys.
Bronchial Tubes. (Noun.) The tubes through which the air passes in going from the windpipe into the lungs.
Bronchitis. (Noun.) Inflammation of the bronchial tubes.
Budding. (Noun.) The production of offspring by the formation of new cells as buds on an already existing cell.
Butterin. (Noun.) An artificial substitute for butter made by churning margarin or oleomargarine — which is made from animal fat — with milk and water or with real butter.
Buttocks. (Noun.) The fleshy parts below the hips; the seat or bottom.
Caked-breast. (Noun.) The distended breast of a nursing woman in which the milk has become hardened.
Cancer. (Noun.) A malignant disease characterized by the formation of a tumor which finally ulcerates.
Canine Tooth. (Noun.) The third tooth from the middle; eye tooth.
Carriage. (Noun.) The manner of holding the body.
Casein. (Noun.) The ingredient of milk that constitutes most of the curd and is the chief proteid.
Catheter. (Noun.) An instrument that is inserted into the bladder through the natural passageway for the purpose of drawing off the urine.
Catheterization. (Noun.) The drawing off of water from the bladder by means of a catheter.
Catkin. (Noun.) The flowers of the willow, birch. etc. (Sometimes called "pussy-willow.")
Causal. (Adj.) Being a cause.
Cell. (Noun.) The smallest particle into which an animal or plant tissue can be divided. (Every living thing is formed of cells.)
Centrifugal Force. (Noun.) The force that causes anything that is swung around to fly off from the centre.

Cereals. (Noun.) The grain-plants whose seeds are used for food, such as wheat, rye, barley, etc.
Cervix. (Noun.) The neck of the womb.
Cessation. (Noun.) A stopping.
Chafe. (Verb.) To make sore by rubbing.
"Change of Life." (Noun.) The period of life at which the menses cease.
Chap. (Verb.) To cause to split or crack.
Chemically. (Adverb.) In a chemical sense; by a chemical process.
Chemist. (Noun.) One whose business is to make chemical examinations.
Chick. (Noun.) The embryo of a chicken.
Child-bed Fever. (Noun.) Infection or blood-poisoning following child-birth; puerperal sepsis.
Child-birth. (Noun.) The act of giving birth to a child; labor.
Chloasmata. (Noun.) Brown spots appearing in the skin.
Chlorosis. (Noun.) A form of anemia or poor blood; the "Green sickness."
Circulation. (Noun.) The flowing of the blood through the body.
Climacteric. (Noun.) The period of life at which the menses or monthly sickness cease.
Clinical Thermometer. (Noun.) A thermometer used in taking a person's temperature.
Coagulate. (Verb.) To clot; to thicken; to curdle.
Cocoon. (Noun.) The silky case a caterpillar spins about itself before it is transformed into a butterfly.
Cold Cream. (Noun.) An ointment containing oil of almond, sperm oil, white wax and rose-water.
Colic. (Noun.) A severe griping pain in the abdomen.
Colostrum. (Noun.) The milky fluid that can be expressed from the breasts of a pregnant woman and that flows for the first few days after the baby is born.
Commercial. (Adj.) Prepared for the market and therefore not chemically pure.
Communicable. (Adj.) Capable of being communicated.
Complexion. (Noun.) The color of the skin, particularly that of the face.
Complexion-brush. (Noun.) A brush used on the skin of the face.
Composition. (Noun.) 1. The manner in which a thing is made. 2. The substance of which a thing is made.
Compound. (Adj.) Composed of two or more ingredients; not simple.
Compress. (Noun.) A folded cloth applied firmly to a part. *Cooling Compress.* A compress that is kept cold by being frequently placed upon ice or wrung out of ice water. *Hot Compress.* A compress that is kept hot by being wrung out of hot water at frequent intervals. *(Cold) Stimulating Compress.* A linen compress wrung out of cold water and covered with a dry flannel compress.

Conception. (Noun.) The fertilization of the female germ cell by the male germ cell.

Condensed Milk. (Noun.) A white syrupy liquid made by evaporating most of the water from milk and then adding sugar.

Condiments. (Noun.) Things used to give a relish to food.

Conductor. (Noun.) A body that conducts or transmits (heat).

Conduction. (Noun.) Transmission of heat from points of high temperature to points of low temperature.

Confinement. (Noun.) Child-birth.

Congestion. (Noun.) An abnormal accumulation of blood in an organ or part of the body.

Conjugal. (Adj.) Pertaining to marriage.

Consanguinity. (Noun.) Blood-relationship.

Constipation. (Noun.) Infrequency and difficulty of bowel movements; costiveness.

Constituents. (Noun.) Parts, or necessary parts; ingredients.

Constriction. (Noun.) 1. A squeezing.
2. The state of being squeezed.

Consumption. (Noun.) A disease of the lungs due to a germ called the tubercle bacillus, and accompanied by wasting.

Contagious. (Adj.) Communicable by means of contact with the person having the disease, or with anything (including air) that has been in contact with him; catching.

Contaminated. (Verb.) Rendered impure by contact.

Contract. (Verb.) 1. To become smaller by being drawn together.
2. To acquire by contagion.

Convalescence. (Noun.) The gradual return to health after sickness.

Conversion. (Noun.) A changing from one form into another.

Convulsion. (Noun.) A violent and involuntary muscular contraction or series of contractions, often associated with unconsciousness.

Corn. (Noun.) A hardening and thickening of the outer skin of the foot caused by friction or undue pressure, usually from the shoe.

Corpulence. (Noun.) Fatness.

Cosmetic. (Noun.) A preparation for improving the complexion.

Creeping-pen. (Noun.) A low wooden fence that is placed around the baby to confine it to a certain portion of the room.

Croup. (Noun.) A disease of the lower portion of the throat and of the windpipe, associated with difficulty in breathing and with a peculiar brassy cough. (The word is commonly but incorrectly used by uninformed persons in describing any acute harsh cough). *Membranous croup* is diphtheria attacking the lower portion of the throat and the windpipe.

Crow's-feet. (Noun.) Wrinkles appearing under and around the outer corner of the eye.

Curdle. (Verb.) To thicken, or cause to thicken and form curds.

Curds. (Noun.) The part of milk that has thickened or curdled.

Cuticle. (Noun.) The outermost layer of the skin; scarf-skin.

Dandruff. (Noun.) Small scales or dust coming from the scarf-skin, or outer skin, of the scalp.
Deaf Mutism. (Noun.) The condition of being both deaf and dumb.
Debilitated. (Verb.) Weakened.
Decoction. (Noun.) 1. The act of boiling.
2. The water in which a substance has been boiled.
Deformity. (Noun.) Unnatural shape.
Degeneracy. (Noun.) The tendency to deteriorate and go from better to worse.
Degenerate. (Adj.) Tending to become worse.
Deleterious. (Adj.) Injurious.
Delivery. (Noun.) The birth of the child.
Dementia. (Noun.) A form of insanity marked by progressive impairment of the mental faculties.
Density. (Noun.) Compactness.
Dental Floss. (Noun.) A silky substance used for cleansing the teeth.
Dentition. (Noun.) 1. The process of cutting the teeth, or teething.
2. The period during which the teeth are cut.
Deterioration. (Noun.) Lowering of the character or constitution.
Detrimental. (Adj.) Hurtful.
Development. (Noun.) A gradual growth through progressive changes.
Devote. (Verb.) To set apart.
Diagnosis. (Noun.) Recognition of a disease.
Diernal. (Adj.) Pertaining to the day.
Digestible. (Adj.) Easy of digestion.
Digestion. (Noun.) The process the food undergoes in the body before it can enter the blood.
Dilute. (Verb.) To weaken by adding water.
Dip. (Noun.) A brief plunge.
Discharge. (Noun.) A flowing out.
Disinfection. (Noun.) The rendering free from germs.
Disseminate. (Verb.) To scatter; to spread by scattering.
Distinction. (Noun.) The mark of difference.
Door Jamb. (Noun.) The side of a door-way.
Douche. (Noun.) A jet of water striking the body, or entering one of its cavities.
Douche-pan. (Noun.) A pan used to catch the water in douching the vagina.
"Dropping." (Noun.) The flattening of the abdominal wall that occurs when the womb containing the unborn child drops from the abdomen into the pelvis.
Dyspeptic. (Adj.) Suffering from indigestion.
Ebullition. (Noun.) A bubbling up (used figuratively); a sudden burst.
Economic. (Adj.) 1. Domestic; 2. relating to the means of living; 3. saving.
Effervescent. (Adj.) Bubbling with a hissing sound.
Elements. (Noun.) Parts.

Elevate. (Verb.) To raise.
Embryo. (Noun.) The unborn animal in the earlier stages of development.
Emulsion. (Noun.) A mixture of an oily substance with a liquid.
Enema. (Noun.) An injection into the rectum; a clyster.
Entente. (Noun.) Meaning.
Environment. (Noun.) Surrounding things and conditions.
Epidermis. (Noun.) The outer layer of skin; scarf-skin.
Epilepsy. (Noun.) A disease characterized by sudden loss of consciousness and by convulsions, known as fits.
Epoch. (Noun.) A definite period of time.
Eradicate. (Verb.) To remove utterly.
Eruption. (Noun.) A rash or breaking out.
Evacuate. (Verb.) To empty.
Evaporation. (Noun.) Conversion into vapor.
Excretion. (Noun.) 1. A throwing out or discharge of the waste products of an organ or of the body.
2. The substance thus thrown out or discharged.
Exhale. (Verb.) To breathe out.
Expiration. (Noun.) Breathing out.
Expiratory Act. (Noun.) The act of breathing out.
Fad. (Noun.) A fancy, whim or hobby.
Fallopian Tube. (Noun.) The tube from the ovary to the womb, through which the ovum passes.
Fat-free Milk. (Noun.) Milk from which all the fat has been removed.
Feces. (Noun.) The matter expelled from the rectum; dung.
Female. (Adj.) Pertaining to those animals or plants that are capable of producing offspring.
Fencing. (Noun.) An exercise or contest with blunt swords, known as foils.
Fertilization. (Noun.) The meeting of the male germ-cell and the female germ-cell, by which the latter is made capable of developing into a new individual.
Fertilize. (Verb.) By the addition of the male germ-cell to render the female germ-cell capable of developing into a new individual.
Fetus. (Noun.) The unborn animal in the later stages of development.
Fibroid. (Noun.) A muscle-tumor of the womb.
Fissures. (Noun.) Cracks.
Flatulence. (Noun.) The presence of wind in the stomach or intestines.
Flocculent. (Adj.) Fleecy; flaky.
Floss. (Noun.) A silky substance growing on certain plants, such as corn and milkweed.
Fomentation. (Noun.) Flannels or other cloths wrung out of hot water and placed on the body as a means of applying moist heat.
Fontanelle. (Noun.) A spot on the top of the baby's head where the bone is absent.

Formula. (Noun.) A list of the names and quantities of the ingredients of a mixture.
Foster-child. (Noun.) A child nursed by one not its mother.
Fountain-syringe. (Noun.) A syringe consisting of a rubber bag connected with a rubber tube.
Function. (Noun.) The use, work or mode of action of an organ.
Functionate. (Verb.) To act.
Genealogical. (Adj.) Pertaining to the descent of a person or family from an ancestor.
Generative. (Adj.) Pertaining to the process of begetting offspring.
Genital. (Adj.) Pertaining to the organs concerned in the process of reproduction or begetting offspring.
Germ. (Noun.) A microbe; a minute form of plant life, frequently causing disease.
Gestation. (Noun.) Pregnancy; the condition of carrying a developing child in the womb.
Gesture. (Noun.) An expressive movement of the body or limbs.
Gland. (Noun.) An organ of the body that secretes substances useful to the body or that throws out waste matters.
Golf. (Noun.) A game in which a small ball is driven by means of sticks from one hole to another.
Gradations. (Noun.) Progress by steps.
Gravity-cream. (Noun.) The cream that rises to the top of a vessel in which milk has been standing.
Grimace. (Noun.) A distortion of the face.
Gynecology. (Noun.) The study and treatment of diseases peculiar to women.
Hemorrhage. (Noun.) Bleeding.
Hemorrhoids. (Noun.) Enlarged and thickened veins about the anus; piles.
Heredity. (Noun.) The transmission of form and traits from parent to offspring.
Hot-Water Bag. (Noun.) A rubber bag which is filled with hot water and used in applying dry heat.
Hydra. (Noun.) A small water plant.
Hydrotherapy. (Noun.) Treatment by means of water.
Hygiene. (Noun.) The science and art of preserving the health.
Hymen. (Noun.) The membrane stretched across the external opening of the vagina and partly closing it.
Hypochondriac. (Noun.) A person suffering from hypochondriasis.
Hypochondriasis. (Noun.) A diseased condition in which the person is always anxious about his health and imagines that he has various ailments.
Ice-bag. (Noun.) A rubber bag, which is filled with ice and used for applying dry cold.
Idiocy. (Noun.) One without mental understanding from birth.
Illegitimate. (Adj.) Contrary to law or custom; born out of wedlock.

Imbecile. (Noun.) One who is mentally feeble.
Immerse. (Verb.) To dip.
Impermeable. (Noun.) Not permitting the passage of a fluid through its substance.
Impervious. (Adj.) Not to be passed through.
Impoverished. (Verb.) Made poor.
Impregnated. (Verb.) Made pregnant or fertilized by the addition of the male germ-cell to the female germ-cell.
Incisors. (Noun.) The four front teeth in each jaw.
Incubator. (Noun.) An apparatus for preserving the life of a prematurely born infant.
Infected. (Verb.) Tainted; brought into contact with disease or disease germs.
Infection. (Noun.) The communication of disease or of disease germs.
Inferior. (Adj.) Lower.
Ingredients. (Noun.) Substances of which a mixture is composed.
Inherit. (Verb.) To receive from a parent or other ancestor.
Iniquity. (Noun.) Wrong; wickedness; gross injustice.
Injection. (Noun.) 1. The act of throwing or forcing in.
2. That which is thrown or forced in.
Injunction. (Noun.) Command.
Insomnia. (Noun.) Sleeplessness.
Inspiration. (Noun.) The act of breathing in.
Intensity. (Noun.) Degree.
Intermission. (Noun.) Temporary cessation.
Intermittent. (Adj.) Ceasing at intervals.
Interval. (Noun.) A space or period between.
Introspective. (Adj.) Examining and studying oneself.
Inverted. (Verb.) Turned upside down.
Involution. (Noun.) The gradual return of the womb to its normal size and condition after labor.
Irremedial. (Adj.) Beyond remedy; incurable.
Irreparable. (Adj.) Incapable of being repaired.
Irrevocable. (Adj.) Not to be recalled.
Irritable. (Adj.) Easily stimulated.
Irritation. (Noun.) The act of exciting.
Isolation. (Noun.) The complete separation from other persons of one sick with a contagious disease.
Kindergarten. (Noun.) A school for very young children, where the instruction is imparted by the use of objects, games and songs.
Kumyss. (Noun.) Fermented milk.
Labia. (Noun.) The folds on the sides of the vulva.
Labor. (Noun.) Childbirth.
Laboratory. (Noun.) Chemical workshop.
Laceration. (Noun.) A tear.
Lactation. (Noun.) The secretion of milk.
Lancinating. (Adj.) Sharp and shooting.

Larynx. (Noun.) The part of the throat where the voice is produced.
Latent. (Adj.) Hidden.
Laxative. (Noun.) A medicine that moves the bowels gently.
Leucorrhea. (Noun.) A whitish or mucous discharge from the vagina.
Ligament. (Noun.) A band of tissue binding one part to another.
Lightening. (Noun.) The flattening of the abdomen caused by the dropping of the womb into the pelvis during the last weeks of pregnancy.
Lime-water. (Noun.) A solution of lime.
Liquor Amnii. (Noun.) The water surrounding the child in the womb.
Lochia. (Noun.) The discharge from the womb in a woman after childbirth.
Loins. (Noun.) The lower part of the back and the region of the hips.
Lubricant. (Noun.) An oily or greasy material used to make things smooth or slippery.
Lunar. (Adj.) Pertaining to the moon.
Lying-in. (Adj.) Pertaining to childbirth.
Mackintosh. (Noun.) 1. Cloth rendered waterproof by a solution of India rubber.
2. A garment made out of such cloth.
Male. (Adj.) Pertaining to those animals and plants which add that element to a female germ-cell by which the latter is made capable of developing into a new individual.
Mammals. (Noun.) Animals that suckle their young.
Mammary Binder. (Noun.) A bandage or support for the breasts.
Mammary Glands. (Noun.) The breasts.
Manipulation. (Noun.) The act of handling or working with the hands.
Margarin. (Noun.) A fatty substance extracted from lard or oil.
Massage. (Noun.) A rubbing and kneading of the muscles.
Mastication. (Noun.) The act of chewing.
Matrimony. (Noun.) The state of marriage.
Mature. (Adj.) Fully developed.
Maturity. (Noun.) Full development.
Membrane. (Noun.) A thin lining tissue.
Membranous Croup. (Noun.) Diphtheria of the larynx or lower throat.
Meconium. (Noun.) A black substance discharged from the bowels of a new-born infant.
Meningitis. (Noun.) An inflammation of the membranes covering the brain or spinal cord.
Menopause. (Noun.) The final cessation of the menses or monthly courses.
Menstrual. (Adj.) Pertaining to the monthly sickness.
Menstruation. (Noun.) The monthly flow of blood in a woman.
Mental. (Adj.) Pertaining to the mind.
Microbe. (Noun.) A minute living thing or germ, often causing disease.
Microscope. (Noun.) An instrument for magnifying.

Midwife. (Noun.) A woman who makes a practice of assisting women in childbirth.
Midwifery. (Noun.) The practice of assisting women at childbirth.
Milk-cake. (Noun.) The caking of milk in a distended breast.
Milk Laboratory. (Noun.) A place where milk is analyzed and where babies' bottles are filled according to prescription.
Milk-sugar. (Noun.) A sugar made by the evaporation of the whey of milk.
Milk-teeth. (Noun.) The first set of teeth.
Minimum. (Noun.) The smallest amount or degree.
Mitigated. (Verb.) Made lighter.
Mixed Feeding. (Noun.) The feeding of a baby by both the breast and the bottle.
Moccasin. (Noun.) A shoe made of soft leather with a stiff sole.
Modify. (Verb.) To change.
Molars. (Noun.) The back teeth.
Monogamy. (Noun.) The condition of being married to only one person at one time.
Monopolize. (Verb.) To obtain or use the whole of.
Monotony. (Noun.) Sameness.
Morbid. (Adj.) 1. Diseased; 2. depressed in spirits.
Morning Sickness. (Noun.) Nausea or sickness at the stomach felt by a pregnant woman in the morning.
Moroseness. (Noun.) Sullenness; sourness of temper.
Mortality. (Noun.) Frequency of death.
Mucous. (Adj.) Pertaining to, or consisting of, mucus.
Mucus. (Noun.) A slimy fluid secreted by the mucous membrane of animals.
Municipal. (Adj.) Pertaining to the town government.
Nausea. (Noun.) Sickness at the stomach.
Navel. (Noun.) The mark or knob in the centre of the abdomen; belly-button.
Neuralgia. (Noun.) Pain along the course of a nerve.
Neurotic. (Adj.) Nervous.
Nipple. (Noun.) 1. The teat or portion of the breast sucked by the baby.
2. A rounded hollow piece of rubber attached to the mouth of a nursing bottle.
Nits. (Noun.) The eggs of the louse.
Nocturnal. (Adj.) Pertaining to the night.
Non-conductor. (Noun.) A substance that does not conduct heat or electricity.
Normal. (Adj.) According to the rule of Nature.
Nozzle. (Noun.) The tip or end of a syringe.
Nutritive. (Adj.) Nourishing.
Obese. (Adj.) Fat.

Obstetrics. (Noun.) The management of childbirth and the care of a woman during, after, and before childbirth.
Obtund. (Verb.) To dull.
Occlusive. (Adj.) Closing; shutting up.
Oculist. (Noun.) A physician skilled in the treatment of the eyes.
Offspring. (Noun.) Descendants.
Opaque. (Adj.) Not transparent.
Operative. (Noun.) A workman.
Optician. (Noun.) One who makes or sells glasses for the eyes.
Orange-stick. (Noun.) A small sharpened stick of orange-wood used in cleansing the nails.
Organism. (Noun.) A member of the animal or vegetable kingdom.
Os. (Noun.) Mouth or opening of the neck of the womb.
Ovary. (Noun.) That part of a female animal or plant containing the female germ-cells.
Oviduct. (Noun.) The tube through which the ovum or female germ-cell passes on its way from the ovary to the womb.
Ovulation. (Noun.) The discharge of an ovum or female germ-cell from the ovary into the womb.
Ovule. (Noun.) A young, undeveloped seed.
Ovum. (Noun.) The egg or female germ-cell formed in the ovary of an animal.
Palatable. (Adj.) Agreeable to the taste.
Parallel. (Adj.) Having the same direction.
Parasites. (Noun.) Insects living on animals, such as lice.
Paroxsym. (Noun.) Spasm.
Participation. (Noun.) The act of taking part.
Parturition. (Noun.) Childbirth.
Passion. (Noun.) Intense emotion.
Pasteurization. (Noun.) The heating to 140° F. in order to destroy dangerous germs.
Pelvis. (Noun.) The bony basin holding the womb, bladder and rectum, etc.
Pendulous. (Adj.) Hanging.
Penetrate. (Verb.) To pierce into or through.
Perambulator. (Noun.) Baby-coach.
Percentage. (Noun.) Rate per hundred.
Periodic. (Adj.) Occurring at regular periods.
Peritonitis. (Noun.) Inflammation of the outer coat of the intest
Perpetuation. (Noun.) Continuation.
Phenomenal. (Adj.) Remarkable.
Phenomenon. (Noun.) A thing that is observed.
Physical. (Adj.) Bodily.
Physiology. (Noun.) The science that treats of the work of living things — what they do.
Pistil. (Noun.) The female or seed-bearing organ of a flower.

Piston. (Noun.) The movable piece that fits into the barrel of a syringe.
Placenta. (Noun.) After-birth.
Placid. (Adj.) Calm.
Pneumonia. (Noun.) Inflammation of the lungs.
Poise. (Noun.) The position in which all the parts are balanced.
Pollen. (Noun.) The male part of the flower, appearing as a fine yellowish dust.
Polyp. (Noun.) A tumor composed of mucus.
Pommel. (Noun.) The part of a side saddle fitting under or over the knee.
Pores. (Noun.) The openings of the sweat glands in the skin.
Proportionately. (Adv.) According to a certain rate.
Poultice. (Noun.) A hot soft mass used for applying moist heat.
Precept. (Noun.) Instruction.
Predisposition. (Noun.) Tendency or inclination.
Pregnancy. (Noun.) The state of being with child.
Pregnant. (Adj.) Being with child; "in the family way."
Prematurely. (Adv.) Before the proper time.
Primitive. (Adj.) Earliest.
Principle. (Noun.) A well-known truth.
Promiscuity. (Noun.) The absence of the institution of marriage in a people.
Proteid. (Noun.) The substance that constitutes the nourishing part of meat and forms the cheesy part of milk.
Provisional. (Adj.) Temporary.
Pruritis. (Noun.) Itching.
Puberty. (Noun.) The period of life at which a human being becomes capable of producing offspring.
Pubic. (Adj.) Pertaining to the front of the pelvis.
Puerperal Sepsis or Puerperal Fever. (Noun.) Blood-poisoning after childbirth.
Puerperium. (Noun.) The period following childbirth.
Pulse-rate. (Noun.) The number of pulse beats in a minute.
Purgative. (Noun.) A medicine that cleans out the bowels.
Pus-tube. (Noun.) An abscess of the fallopian tube.
Putrid. (Adj.) Decayed.
Quarantine. (Noun.) The guarding of a dwelling in which a contagious disease exists, so that no one can go in or out.
Quickening. (Noun.) The movements of the child in the womb as felt by the mother.
Radical. (Adj.) Going to the root.
Ratio. (Noun.) Proportion or relation of conditions.
Reaction. (Noun.) The return to warmth after the application of cold.
Receptacle. (Noun.) That which receives or holds anything.
Recline. (Verb.) To lie.
Rectum. (Noun.) The lower end of the intestines.

Reflect. (Verb.) To throw off.
Regurgitating. (Noun.) The vomiting of infants.
Relax. (Verb.) To make less rigid.
Remittent. (Adj.) Disappearing temporarily.
Reproduction. (Noun.) The formation of new animals or plants by and from those already existing.
Respiration-rate. (Noun.) The number of times a minute a person breathes.
Respiratory. (Adj.) Pertaining to the breathing.
Restrict. (Verb.) To limit.
Resuscitate. (Verb.) To revive.
Retard. (Verb.) To delay; to hinder.
Reversible. (Adj.) Capable of being turned in the opposite direction.
Rickets. (Noun.) A disease of children in which the bones fail to become hard.
Rose. (Noun.) A perforated nozzle that distributes water in a spray or shower.
Rubella. (Noun.) German-measles.
Rash. (Noun.) A breaking out or eruption.
Rural. (Adj.) Pertaining to the country.
Saliva. (Noun.) The secretion always present in the mouth.
Sallow. (Adj.) Of a brownish yellow color.
Saturated-solution. (Noun.) A solution of a substance in which no more of that substance can be dissolved.
Savory. (Adj.) Pleasing to the taste or smell.
Scrofulous. (Adj.) Tuberculous; subject to enlargement of the glands of the neck, due to the germs causing consumption.
Scurvy. (Noun.) A disease caused by the lack of wholesome diet.
Secluded. (Verb.) Separated from others.
Secrete. (Verb.) To produce by the action of a gland.
Secretion. (Noun.) 1. The production of a substance by the action of a gland.
2. The substance produced by the action of a gland.
Sedentary. (Adj.) Sitting.
Semi-recumbent. (Adj.) Partially lying; leaning.
Sepsis. (Noun.) Poisoning by germs.
Sexual. (Adj.) Pertaining to the production of offspring.
Show. (Noun.) The blood-stained plug of mucus that is expelled during the first stage of labor.
Sitz-bath. (Noun.) Hip-bath.
Snarls. (Noun.) Tangles.
Soft Water. (Noun.) Water containing little or no lime.
Sparingly. (Adv.) With moderation.
Spasmodic. (Adj.) Occurring in spasms.
Species. (Noun.) A name given to any collection or family of animals or plants which resemble each other, but which differ from all other animals or plants.

Spermatozoon. (Noun.) The male germ-cell.
Sphery. (Adj.) Pertaining to the heavens.
Spray. (Verb.) To sprinkle with fine drops.
Sputum. (Noun.) Spittle.
Stamen. (Noun.) The male part of a flower, containing the pollen.
Starch-water. (Noun.) Water in which starch has been dissolved.
Stays. (Noun.) Corset.
Sterilize. (Verb.) To render free from living germs.
Stigma. (Noun.) The upper portion of the pistil or female part of the flower, which receives the pollen.
Stimulate. (Verb.) To excite to action.
Stoical. (Adj.) Taking no notice of pleasure or pain.
Stockingette. (Noun.) An elastic knitted material.
Stomach-teeth. (Noun.) The two milk teeth on either side of the four lower front teeth.
Striæ. (Noun.) Lines or furrows.
Structure. (Noun.) Arrangement of the parts.
Stunting. (Verb.) Checking the growth of.
Stupe. (Noun.) A cloth wrung out of hot water and used for applying moist heat.
Style. (Noun.) The long portion of the pistil or female part of the flower.
Subdivide. (Verb.) To divide again.
Subject. (Noun.) A person under treatment.
Submerged. (Verb.) Put under water.
Subordinate. (Adj.) Of less importance.
Substitute. (Verb.) To put in the place of another.
Suckle. (Verb.) To nurse.
Sugar of Milk. (Noun.) See "Milk-sugar."
Suppression. (Noun.) The stoppage of a discharge.
Surf-bathing. (Noun.) Bathing in the ocean.
Surgical Cleanliness. (Noun.) Freedom from germs.
Suspended. (Verb.) Hung.
Sweat-bath. (Noun.) A procedure to produce sweating.
Symmetrical. (Adj.) Well-proportioned.
Symptom. (Noun.) Sign of disease.
Synonymous. (Adj.) Expressing the same idea.
Syringe. (Noun.) An instrument used to inject liquids.
System. (Noun.) A collection of tissues or organs of the body doing the same work.
Tadpole. (Noun.) That stage in the development of the frog from the time it leaves the egg until it loses its gills and tail.
Taint. (Noun.) Blemish.
Teething. (Noun.) The cutting of the teeth.
Temperate. (Adj.) Moderate.
Temperature. (Noun.) The degree of heat.
Tendency. (Noun.) Inclination.

Tether-Tennis. (Noun.) A game played with a ball fastened by a string to the top of a tall post, the object being to wind the string around the pole.
Texture. (Noun.) The arrangement of threads in a cloth.
Tissue. (Noun.) A collection of cells of the body doing the same work.
Tocology (Also spelt *tokology*). (Noun.) The management of childbirth.
Toilet. (Noun.) The process of dressing.
Transient. (Adj.) Temporary.
Transmission. (Noun.) The handing down.
Tuber. (Noun.) The thickened portion of an underground stem of a plant, such as a potato.
Tuberculosis. (Noun.) A disease caused by the tubercle bacillus or germ producing consumption.
Tumor. (Noun.) An abnormal enlargement or swelling of a part.
Umbilical Cord. (Noun.) The cord extending from the placenta or afterbirth to an infant's navel and containing the blood-vessels through which the child is nourished while in the womb.
Umbilicus. (Noun.) A knob in the center of the abdomen; navel; belly-button.
Unfertilized. (Verb.) Not rendered capable of developing into a new individual.
Unhygienic. (Adj.) Contrary to the laws of health.
Urine. (Noun.) The liquid that comes from the kidneys through the bladder.
Urinal. (Noun.) A vessel for holding urine.
Urination. (Noun.) The act of passing urine or water.
Uterus. (Noun.) Womb.
Vaccinate. (Verb.) To inoculate with vaccine or the virus of cow-pox in order to prevent the occurrence of small-pox.
Vagina. (Noun.) The tube extending from the womb to the outer parts.
Varicose-Veins. (Noun.) Swollen, thickened veins.
Vegetable. (Adj.) Pertaining to plants.
Ventilation. (Noun.) The process of replacing foul air with pure air.
Vernix Caseosa. (Noun.) A fatty matter covering the skin of a new born infant.
Vicarious. (Adj.) Taking the place of another.
Vitality. (Noun.) Vigor.
Vitiate. (Verb.) To spoil; to injure the quality of.
Vivacity. (Noun.) Liveliness of manner.
Voiding. (Verb.) Emptying out.
Vomiting. (Verb.) The throwing-up of matter from the stomach.
Vulva. (Noun.) The external private parts of a female.
Waters. (Noun.) The liquid that surrounds a child as it lies in the womb.

Weaning. (Verb.) Removing a nursing infant permanently from its mother's breast.

Wet-Nurse. (Noun.) A woman employed to suckle the infant of another.

Whey. (Noun.) That part of milk which remains fluid after the curds have formed.

Womb. (Noun.) The female organ in which a child lies while developing.

Yeast. (Noun.) A minute plant consisting of a number of cells joined together employed in raising bread and in fermenting beer.

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